

Montana

Water Supply Outlook Report

May 1st, 2017



Chad Gipson, *NRCS Montana Snow Survey Electronics Technician*, measures the snowpack at the Branham Lakes snow course, located north of Sheridan, MT in the Tobacco Root Range. This snow course, along with 2 others in the basin, was discontinued in 2012 but is now being measured again to help Ruby River water users assess water supply conditions. Measurements from the end of the month were 93" of snow depth with 36.2" of snow water equivalent (SWE), which is 126% of normal SWE for May 1st.

In northwest Montana, and the southern third of the state, cool and wet weather during the month of April delayed melt and brought increases to the snowpack at many mid to high-elevation snow courses and SNOTEL sites. In this case it was a 6.5" gain in snow water since April 1st, or 248% of normal snowfall for the month. Abundant precipitation this year and healthy snowpack on May 1st has resulted in streamflow forecasts that are near to above average in most locations across the state. *Photo: Lucas Zukiewicz*

For more water supply and resource management information, contact:

Lucas Zukiewicz
Water Supply Specialist
Federal Building
10 East Babcock, Room 443
Bozeman, MT 59715
Phone 406-587-6843
lucas.zukiewicz@mt.usda.gov
<http://www.nrcs.usda.gov/wps/portal/nrcs/main/mt/snow/>

Montana Water Supply Outlook Report as of May 1st, 2017

How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotope, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C., 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

Table of Contents

State-Wide Overview

- Snowpack 1
 - Snowpack Maps 2-4
- Precipitation..... 5
 - Precipitation Maps..... 6-11
- Reservoir Storage 12
 - Reservoir Map..... 13
- Streamflow 14
 - Streamflow Map 15

Individual Basin Summaries

- Kootenai River Basin 16
- Flathead River Basin..... 22
- Upper Clark Fork River Basin..... 28
- Bitterroot River Basin..... 34
- Lower Clark Fork River Basin..... 40
- Jefferson River Basin 46
- Madison River Basin..... 52
- Gallatin River Basin 58
- Headwaters Mainstem (Missouri) River Basin..... 64
- Smith-Judith-Musselshell River Basin 70
- Sun-Teton-Marias River Basin 76
- St. Mary-Milk River Basin 82
- Upper Yellowstone River Basin 88
- Lower Yellowstone River Basin 94

Snowpack Data Report

- SNOTEL and Snowcourse Data Summary..... 102

Snowpack – Overview

Keep it going! Much to the chagrin of some folks in MT who are ready to put on their waders, or jump in a boat, winter kept rolling in across a large part of the state and improved snow totals for May 1st in almost all Montana basins. Snowpack in the western half of the state, west of the Divide, has been above normal since February and April continued to drop snow at high elevations in the basin, and cooler weather prolonged the snowpack at mid elevations. Snowpack totals for May 1st range from 109% to 125% of normal at this time for basins feeding the Columbia River.

East of the Divide snowfall over the month was abundant in the southern part of the state, and hit or miss in some of the more northern basins. The cool wet weather during the latter half of the month helped some basins which were experiencing near or record low snowpack on April 1 improve to near normal on May 1. Lower elevation ranges east of the Divide in the central part of the state experienced melt during the month at mid and low elevations, as the storm track favored the southern basins. Most basins are near to above normal on May 1 for snowpack, but the Headwaters Mainstem (mountains surrounding Helena) and combined Smith-Judith-Musselshell remain below normal for snowpack on May 1.

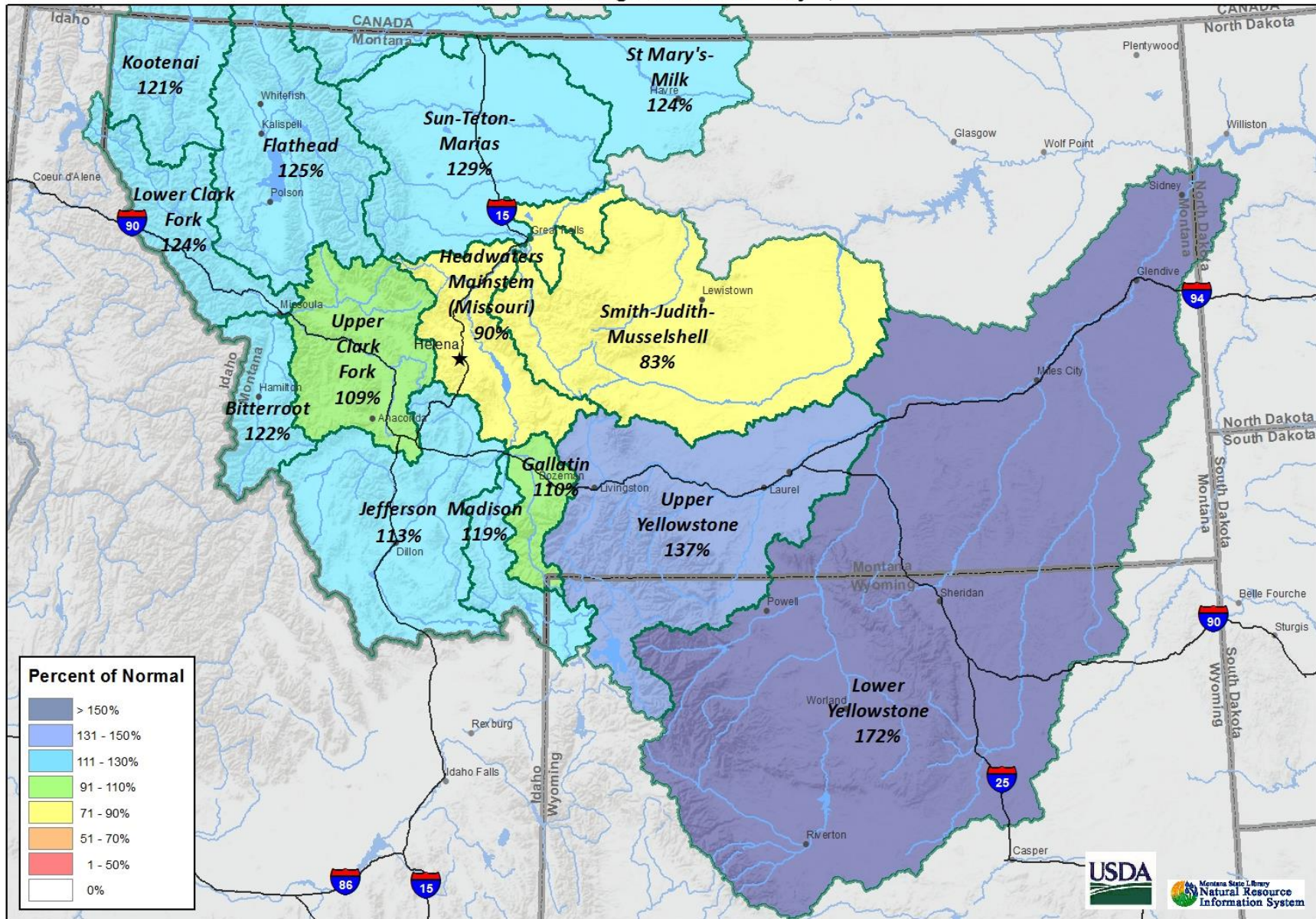
Most of the higher elevations in the basins continue to receive snow and build snowpack as of May 1st. This is common east of the Divide, but west of the Divide the high elevation peaks are happening a bit later than normal. After two to three years of early snowpack runoff it is excellent to see snow holding in the high country, as this provides efficient spring runoff and keeps water available longer during the growing season. For most basins, the bulk of the snow water is still locked up in the snowpack at water yielding elevations, so the weather over the month of May will play a large role in when the bulk of the runoff enters the river system. Sustained cool and wet weather would help to prolong the runoff and keep river levels high through the summer. Snowpack conditions are the best they've been in 3 years on May 1st and look to provide ample runoff this spring and summer.

Snow Water Equivalent

5/1/2017	% Normal	% of Last Year
Columbia River Basin	119	163
Kootnenai in Montana	121	178
Flathead in Montana	125	169
Upper Clark Fork	109	140
Bitterroot	122	174
Lower Clark Fork	124	185
Missouri River Basin	108	144
Jefferson	113	135
Madison	119	149
Gallatin	110	124
Headwaters Mainstem	90	130
Smith-Judith-Musselshell	83	94
Sun-Teton-Marias	129	379
St. Mary-Milk	124	200
Yellowstone River Basin	157	174
Upper Yellowstone	137	180
Lower Yellowstone	172	174

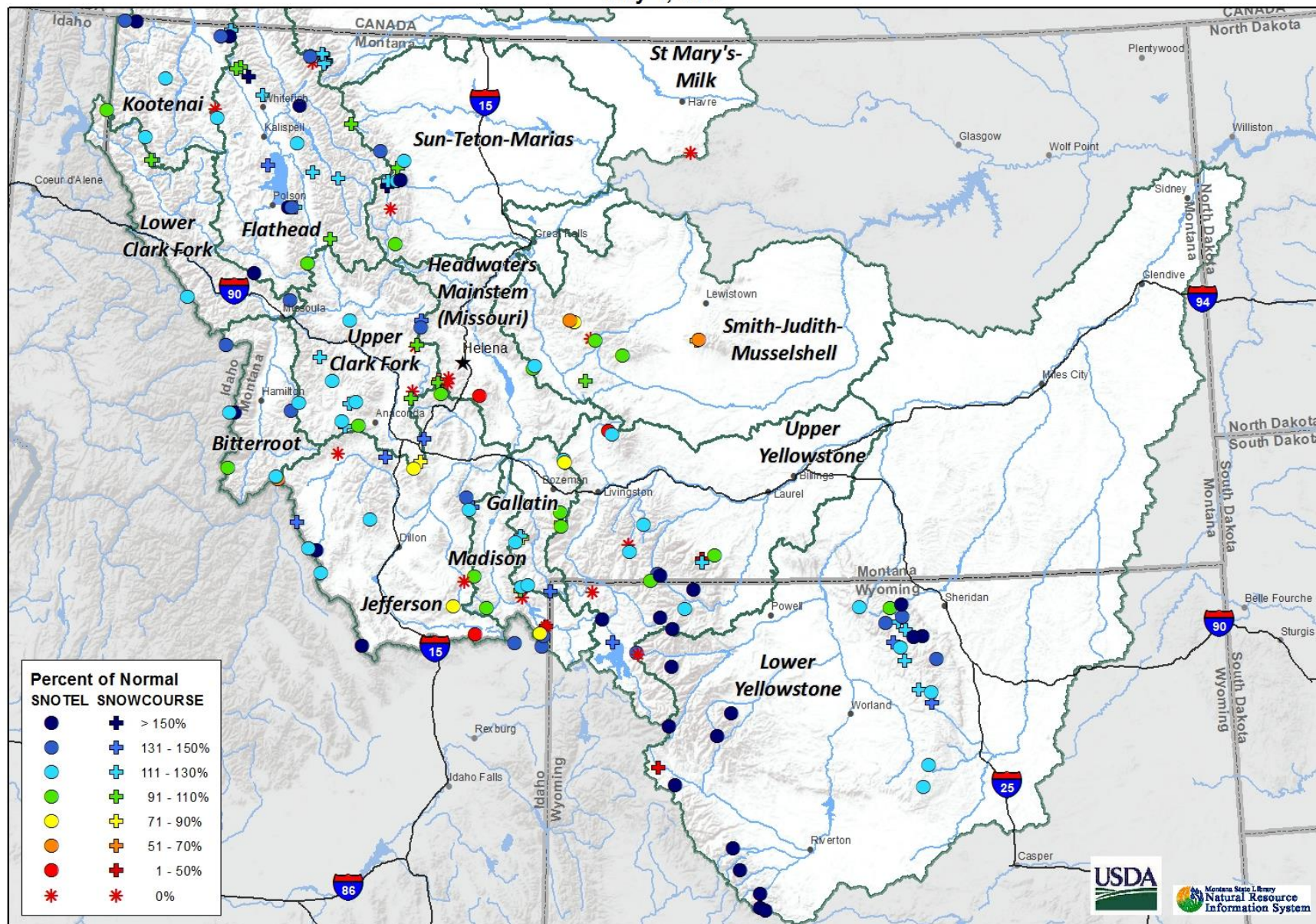
West of Divide	119	163
East of Divide	133	166
Montana State-Wide	118	159

Montana Data Collection Office
Current Snow Water Equivalent
Basin Percentage of Normal - May 1, 2017

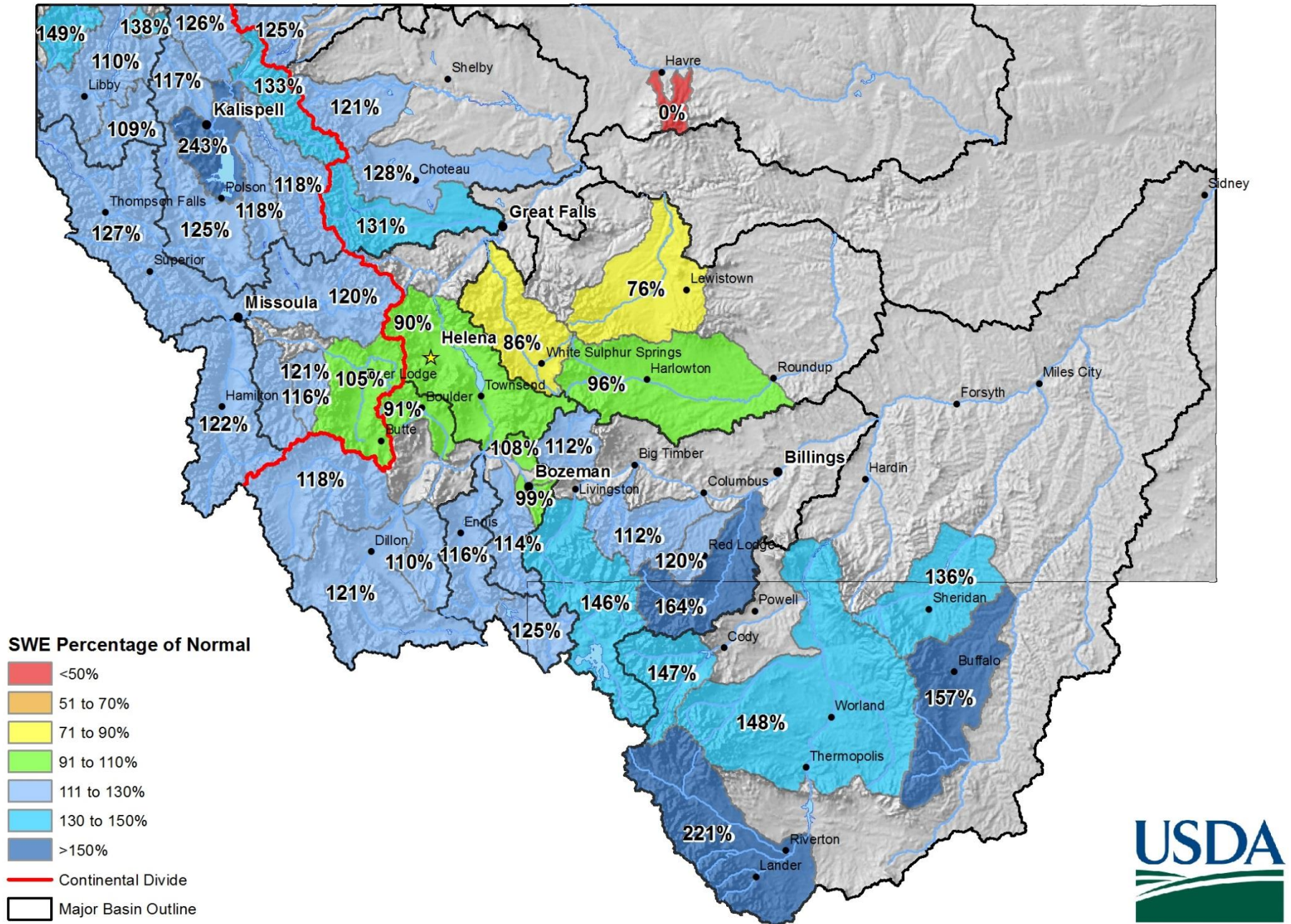


Note: Data includes SNOTEL and Snow course Measurements on May 1, 2017

Montana Data Collection Office
Current Snow Water Equivalent
May 1, 2017



Montana Data Collection Office
Sub-Basin Snow Water Equivalent - May 1st, 2017



Precipitation - Overview

This water year started off with record breaking precipitation in many of the river basins in Montana, and ending the month of April many sites were experiencing record precipitation for the October 1st – May 1st time period. Many of these records are in Northwest Montana where a number of mountain and valley locations are experiencing record, or second highest totals. Missoula is currently experiencing the second highest totals on record, and Kalispell has the record high water year total. Along the along a line along the southern border from Grant, MT in southwest and across to Billing in south central Montana many mountain and valley sites south of there are also experiencing record high water year totals.

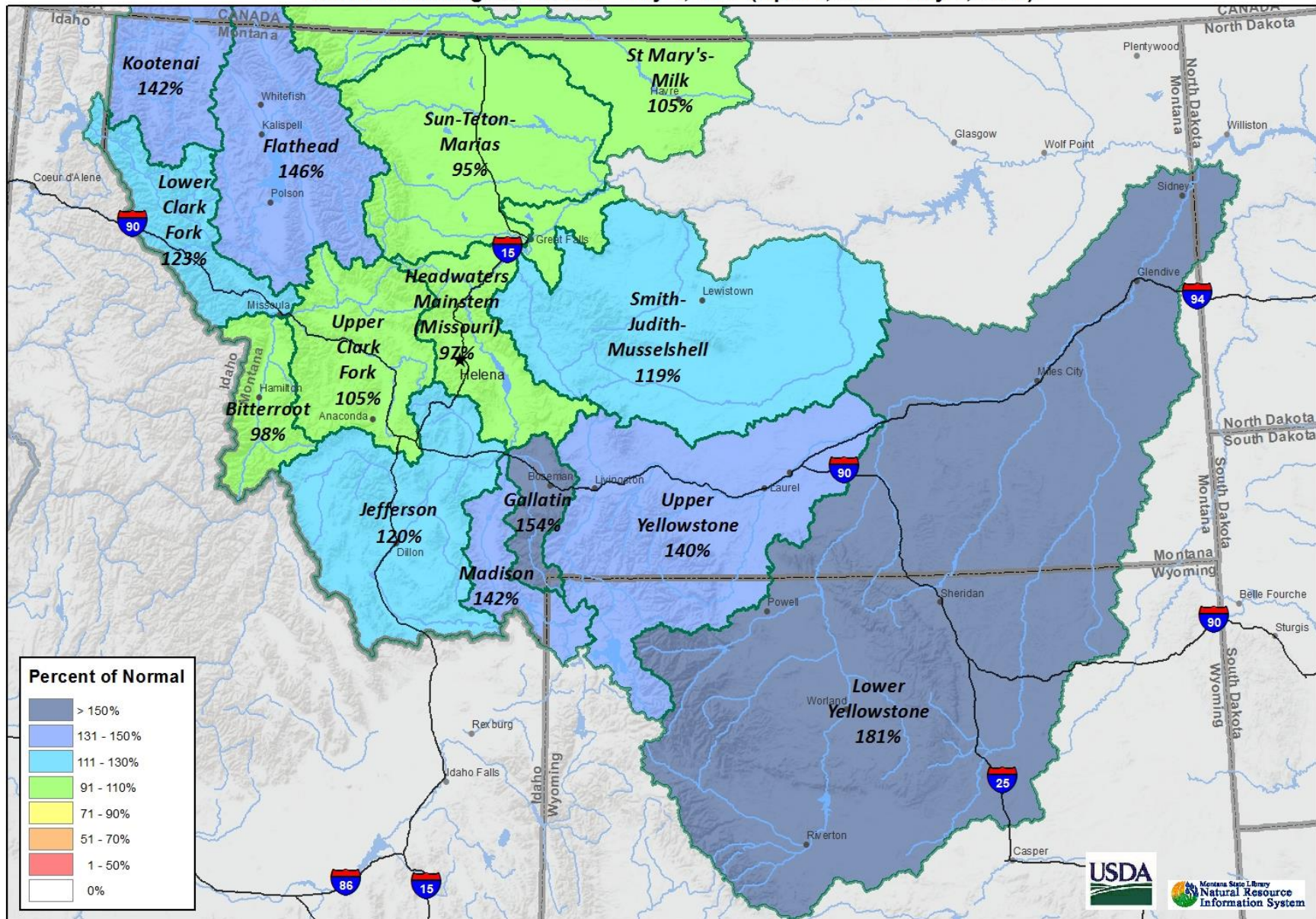
Precipitation over the month of April favored these areas where well above average monthly precipitation fell during the month. Basins in the central part of the state received near to slightly below average precipitation over the month. As of May 1, all basins in the state have water year precipitation that is above average for this date, and all basins are well ahead of last year at this time.

Precipitation

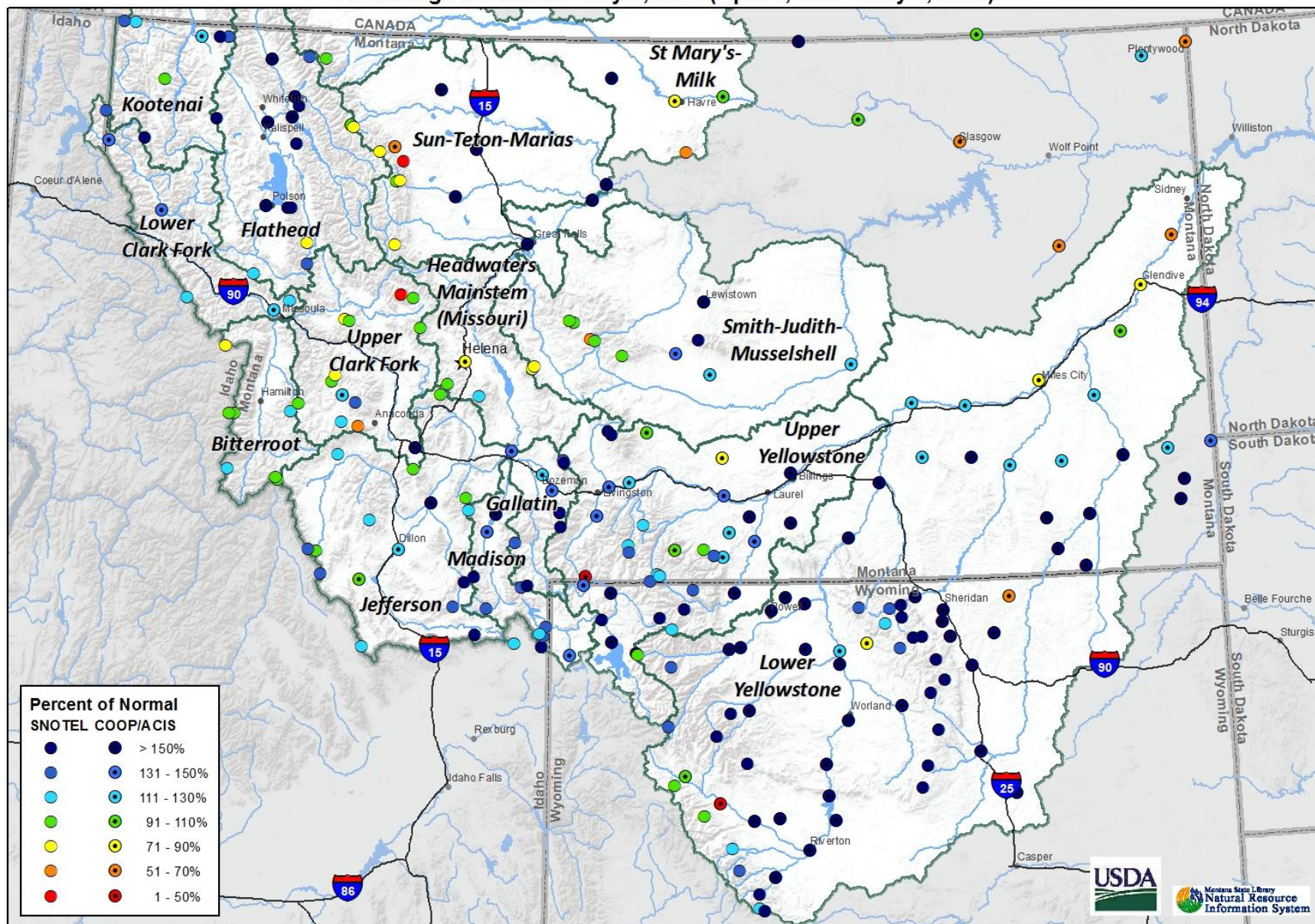
<i>5/1/2017</i>	<i>Monthly % Avg</i>	<i>Water Year % Avg</i>	<i>WY % of Last Year</i>
Columbia River Basin	124	130	129
Kootnenai in Montana	142	141	128
Flathead in Montana	146	136	135
Upper Clark Fork	105	113	119
Bitterroot	98	117	122
Lower Clark Fork	123	136	135
Missouri River Basin	125	129	126
Jefferson	120	119	119
Madison	142	141	147
Gallatin	154	132	127
Headwaters Mainstem	97	110	110
Smith-Judith-Musselshell	119	110	108
Sun-Teton-Marias	95	125	151
St. Mary-Milk	105	149	123
Yellowstone River Basin	170	154	151
Upper Yellowstone	140	145	154
Lower Yellowstone	184	162	151

West of Divide	124	130	129
East of Divide	137	137	137
<i>Montana State-Wide</i>	130	132	131

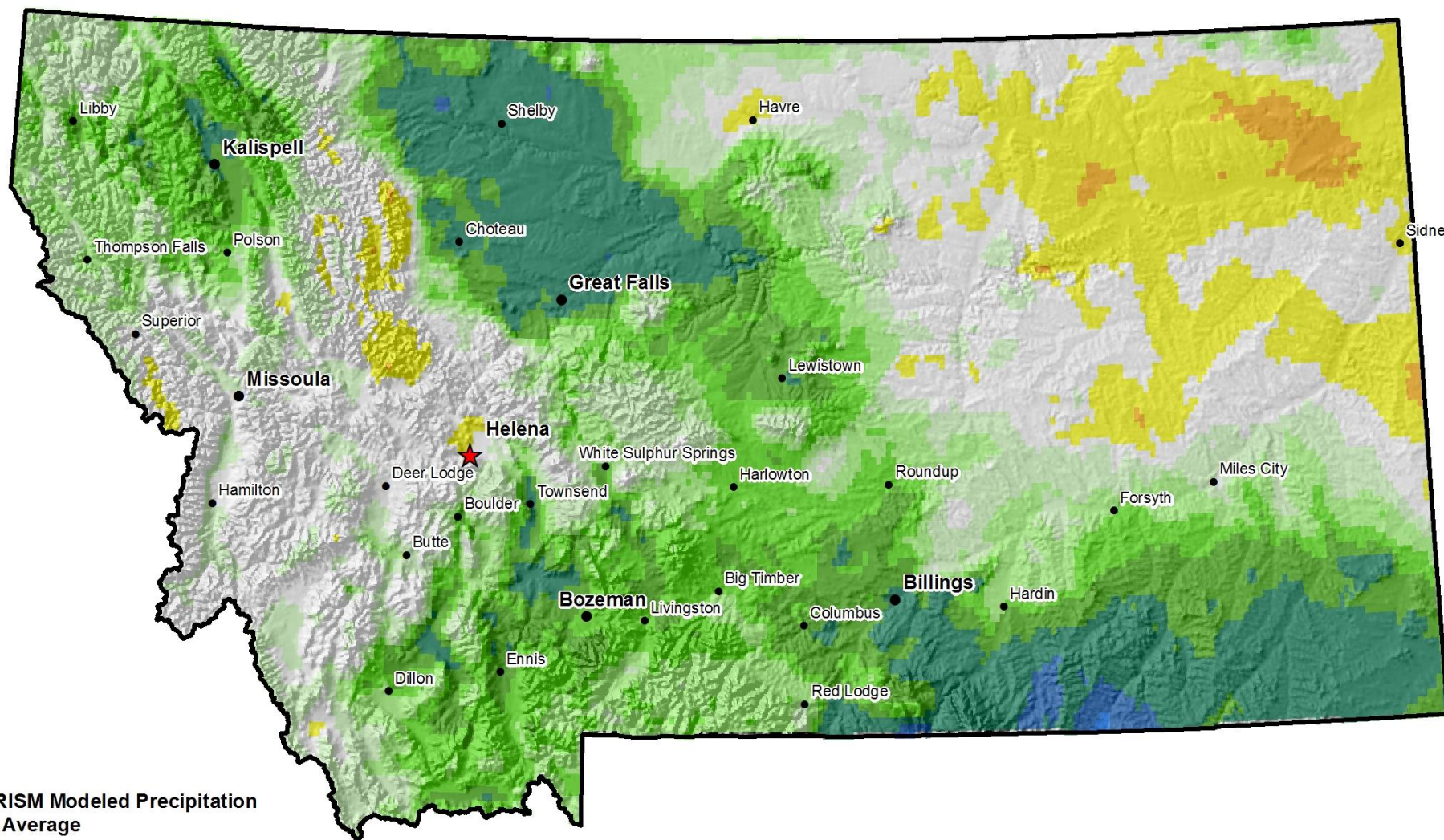
Montana Data Collection Office
Monthly Precipitation
Basin Percentage of Normal - May 1, 2017 (April 1, 2017 - May 1, 2017)



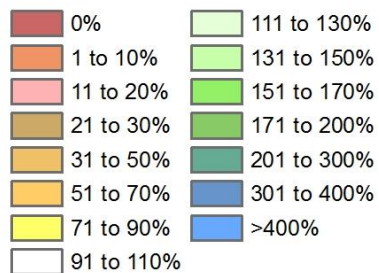
Montana Data Collection Office
 Monthly Precipitation
 Percentage of Normal - May 1, 2017 (April 1, 2017 - May 1, 2017)



PRISM Precipitation May 1st, 2017
April 1st -April 30th, 2017 Monthly Precipitation



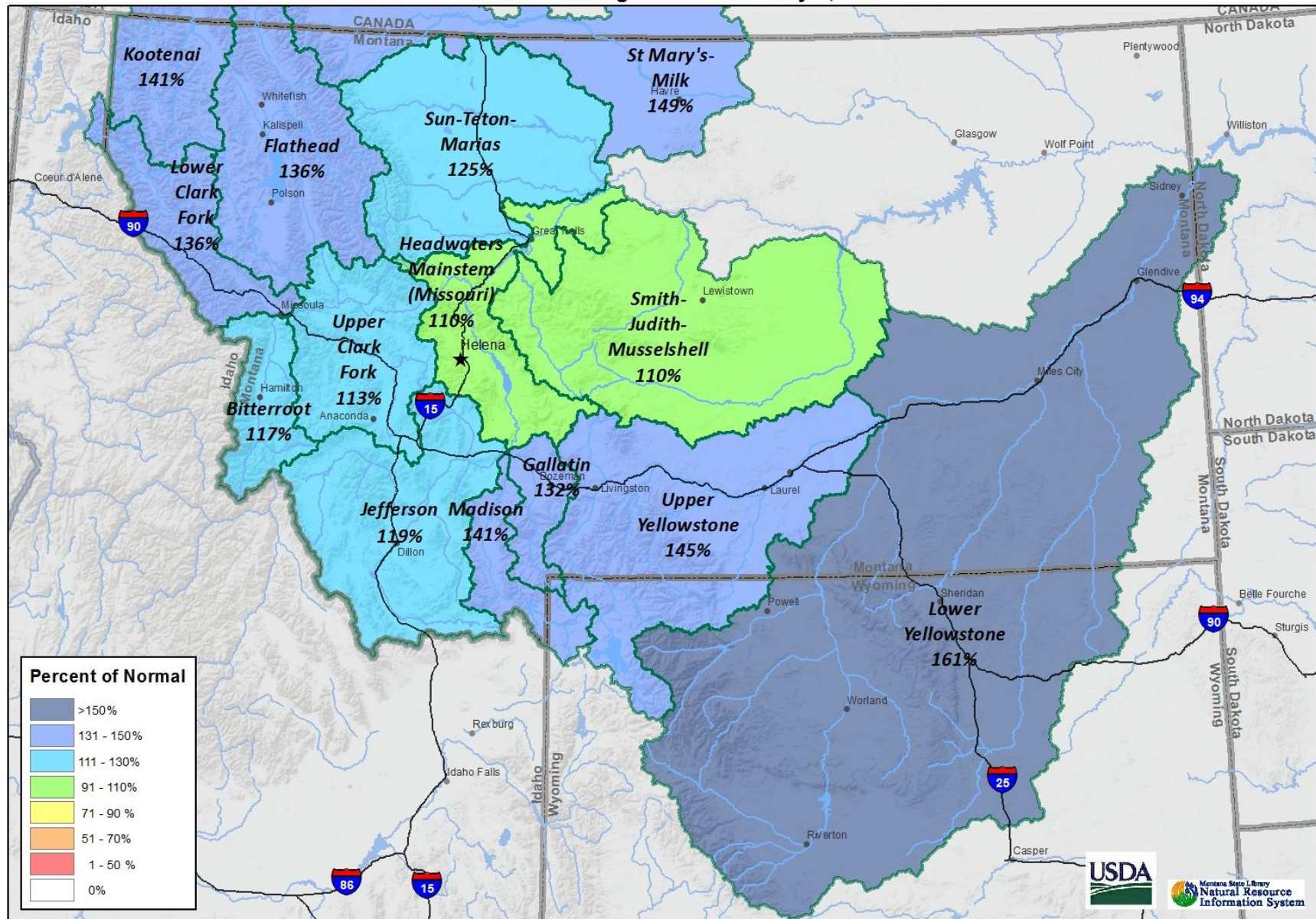
PRISM Modeled Precipitation
% Average



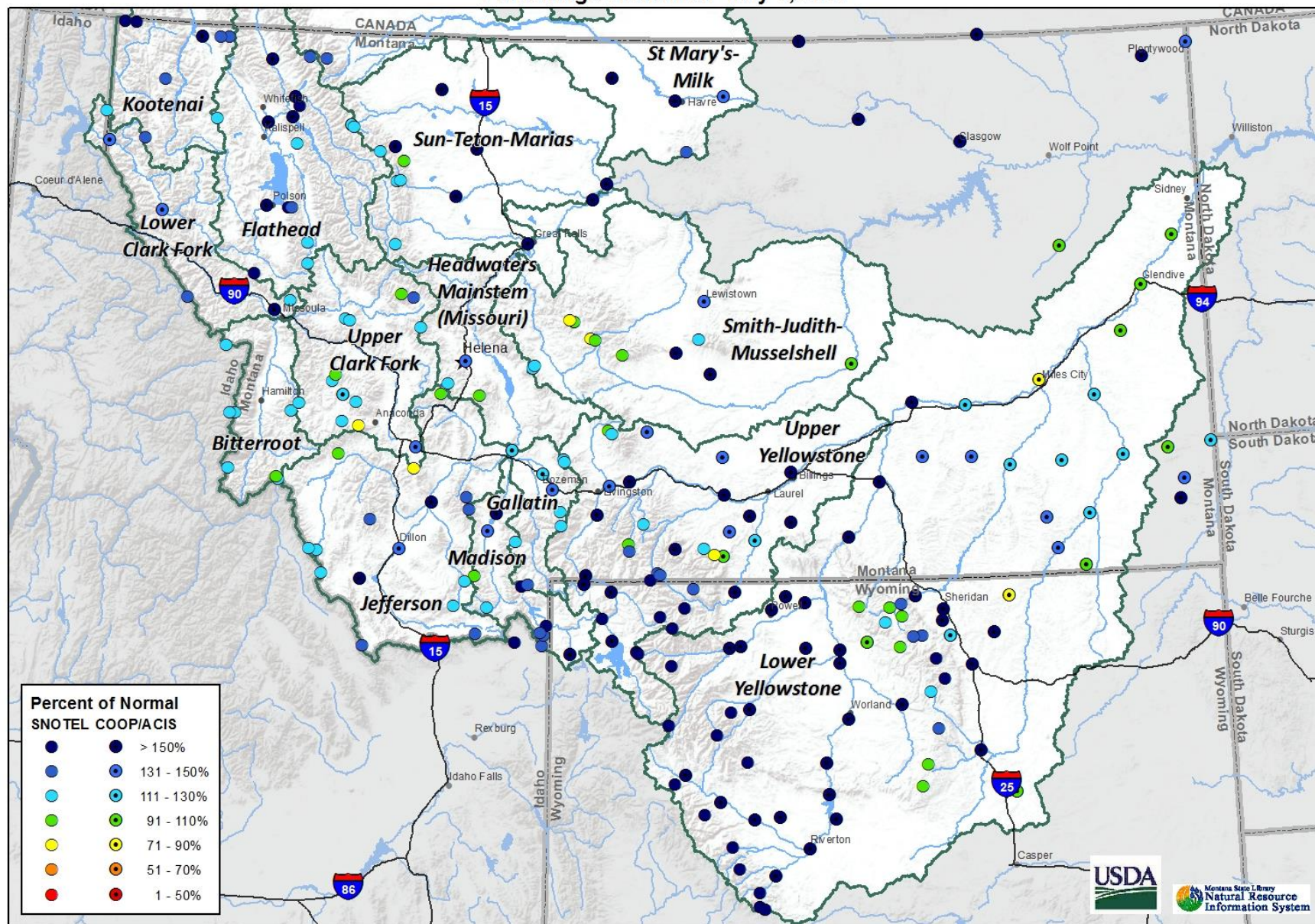
Data provided by PRISM group, Oregon State University



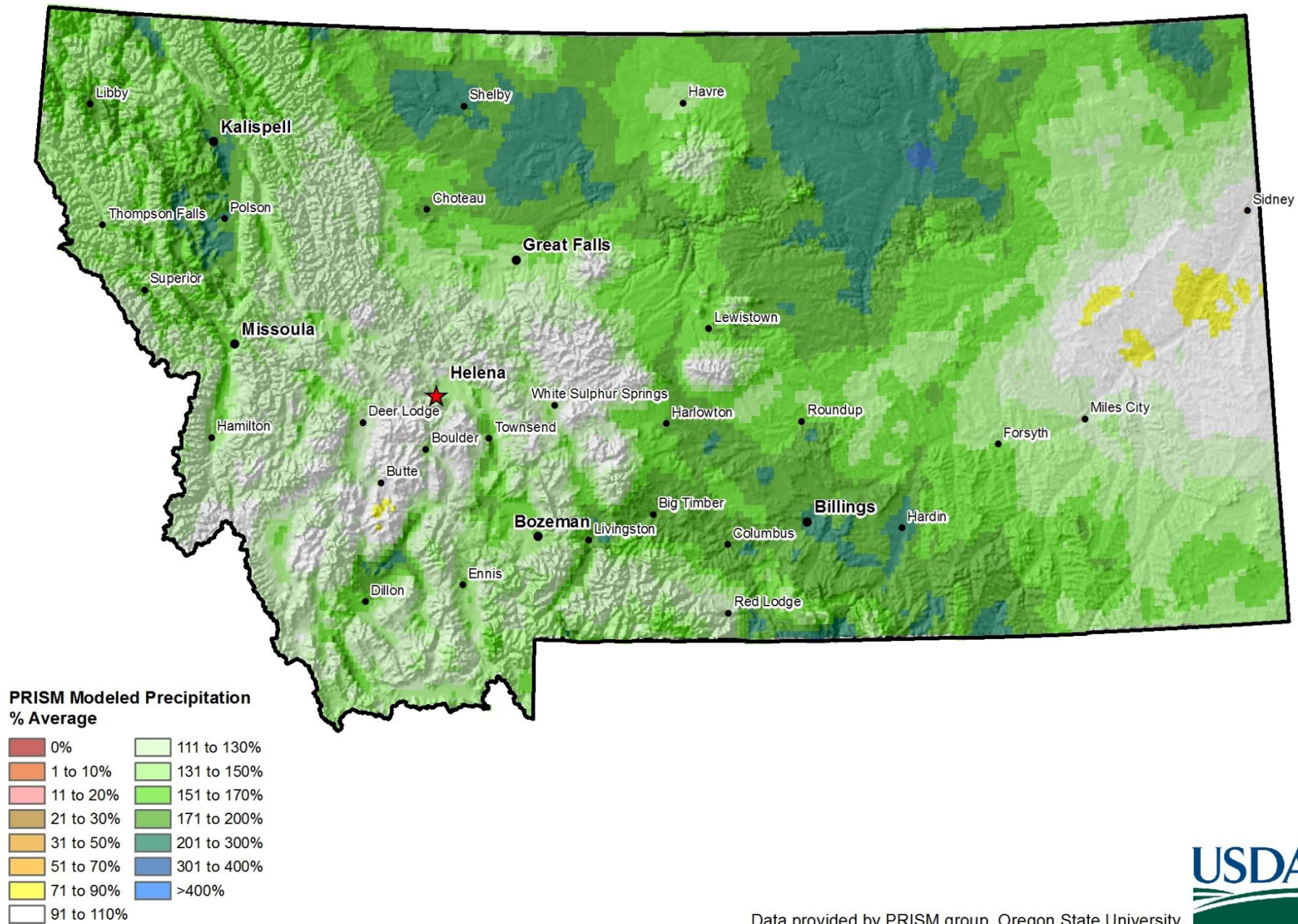
Montana Data Collection Office
Water Year to Date Precipitation
Basin Percentage of Normal - May 1, 2017



Montana Data Collection Office
Water Year to Date Precipitation
Percentage of Normal - May 1, 2017



PRISM Precipitation May 1st, 2017 Water Year-To-Date Precipitation



Data provided by PRISM group, Oregon State University



Reservoirs - Overview

Most Reservoirs across the state are near or slightly above average for May 1st. Streamflow forecasts across the state are suggesting above average flows for the May 1 – July 31 time period, which should allow water managers to fill most of the reservoirs across the state. Reservoir inflows have increased in many locations due to the low elevation snowmelt that occurred during the month of April and percentage of average storage has generally increased during that time.

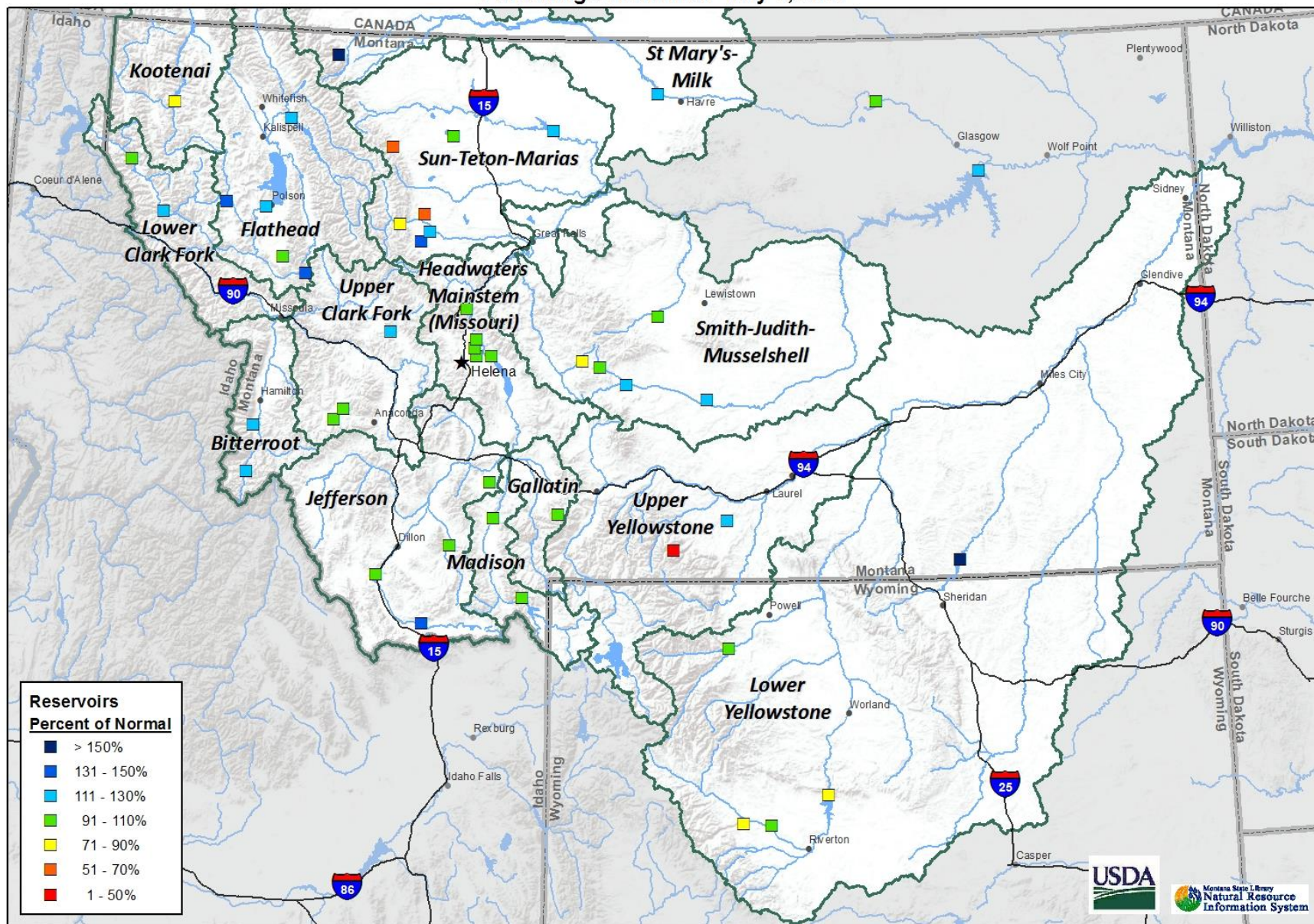
Some reservoirs have seen substantial increases in releases during the last two months in anticipation of the above average snowpack that will feed them during runoff in the coming months. Hungry Horse Reservoir outflows increased during March and have remained at ~10,000cfs during the month of April. In southern Montana, flows from Bighorn (Yellowtail) have increased dramatically over the month with outflows rising to 12,000cfs during the month. This is being done in anticipation of the record snowpack in the Lower Yellowstone entering the system. Forecasts for this point suggest near record inflows to the reservoir, due in large part to the record snowpack in the Wind and Shoshone River basins.

Please view the individual basin reports for detailed reservoir content information.

Reservoir Storage

<i>5/1/2017</i>	<i>% Average</i>	<i>% Capacity</i>	<i>% Last Year</i>
Columbia River Basin	108	58	82
Kootnenai in Montana	87	40	64
Flathead in Montana	124	74	95
Upper Clark Fork	105	84	96
Bitterroot	124	76	81
Lower Clark Fork	107	98	102
Missouri River Basin	117	81	104
Jefferson	108	66	114
Madison	108	79	98
Gallatin	106	64	72
Headwaters Mainstem	119	83	104
Smith-Judith-Musselshell	116	76	89
Sun-Teton-Marias	111	61	108
St. Mary-Milk	134	70	107
Yellowstone River Basin	99	55	92
Upper Yellowstone	117	54	97
Lower Yellowstone	99	56	92
West of Divide	108	58	82
East of Divide	116	79	103
Montana State-Wide	114	72	97

Montana Data Collection Office
Reservoir Levels
Percentage of Normal - May 1, 2017



Streamflow - Overview

Compared to the last two years, streamflow forecasts on May 1 are looking excellent for most river basins in the state of Montana, with most indicating near to above average streamflows this spring and summer. All forecasts west of the Divide are above average for the first time since 2014, and most basins east of the Divide are also near to above average. Only a few river systems in central Montana have forecasts that are below average for the May 1st – July 31st time period. The Smith-Judith-Musselshell River basin forecasts are below average for the coming months, which can be attributed to the lack of snowfall this winter and spring. In contrast, the rivers that feed the Bighorn River in Montana from the south in Wyoming have streamflow forecasts which are approaching record for some rivers and streams. This large volume of water from the record snowpack in the region will work its way north into Montana during this year's runoff. Water managers are actively managing reservoirs to try to control the situation, but there will be impacts to downstream users over the next few months.

The table below is a new format to illustrate the range of forecasts within a basin. Many "River Basins" have 2 to 12 forecast points for smaller streams and tributaries to the major rivers. Its intention is to show that there are forecasts above and below the average for the basin as a whole. In addition, forecasts below are given for the 50% exceedance forecasts, which is the median forecast. Each streamflow point also has a range of forecasted outcomes (10%, 30%, 50%, 70%, 90%) which can be used for guidance if, or when, conditions change. For individual streamflow forecasts please consult the individual basin streamflow tables.

<i>River Basin</i>	MAY-JUL 50 % Exceedance Forecasts		
	Highest Point Forecast*	Lowest Point Forecast**	Basin Avg Forecast***
<i>Columbia River Basin</i>	152%	102%	126%
Kootenai River Basin	145%	124%	131%
Flathead River Basin	152%	117%	135%
Upper Clark Fork	136%	102%	125%
Bitterroot River Basin	117%	108%	112%
Lower Clark Fork	130%	119%	125%
<i>Missouri River Basin</i>	125%	78%	109%
Jefferson	125%	92%	109%
Madison	116%	111%	114%
Gallatin	108%	101%	105%
Headwaters Mainstem	113%	108%	111%
Smith Judith Musselshell	94%	78%	86%
Sun Teton Marias	119%	93%	112%
St Mary	125%	124%	124%
<i>Yellowstone River Basin</i>	244%	94%	153%
Upper Yellowstone	167%	94%	134%
Lower Yellowstone	244%	125%	172%

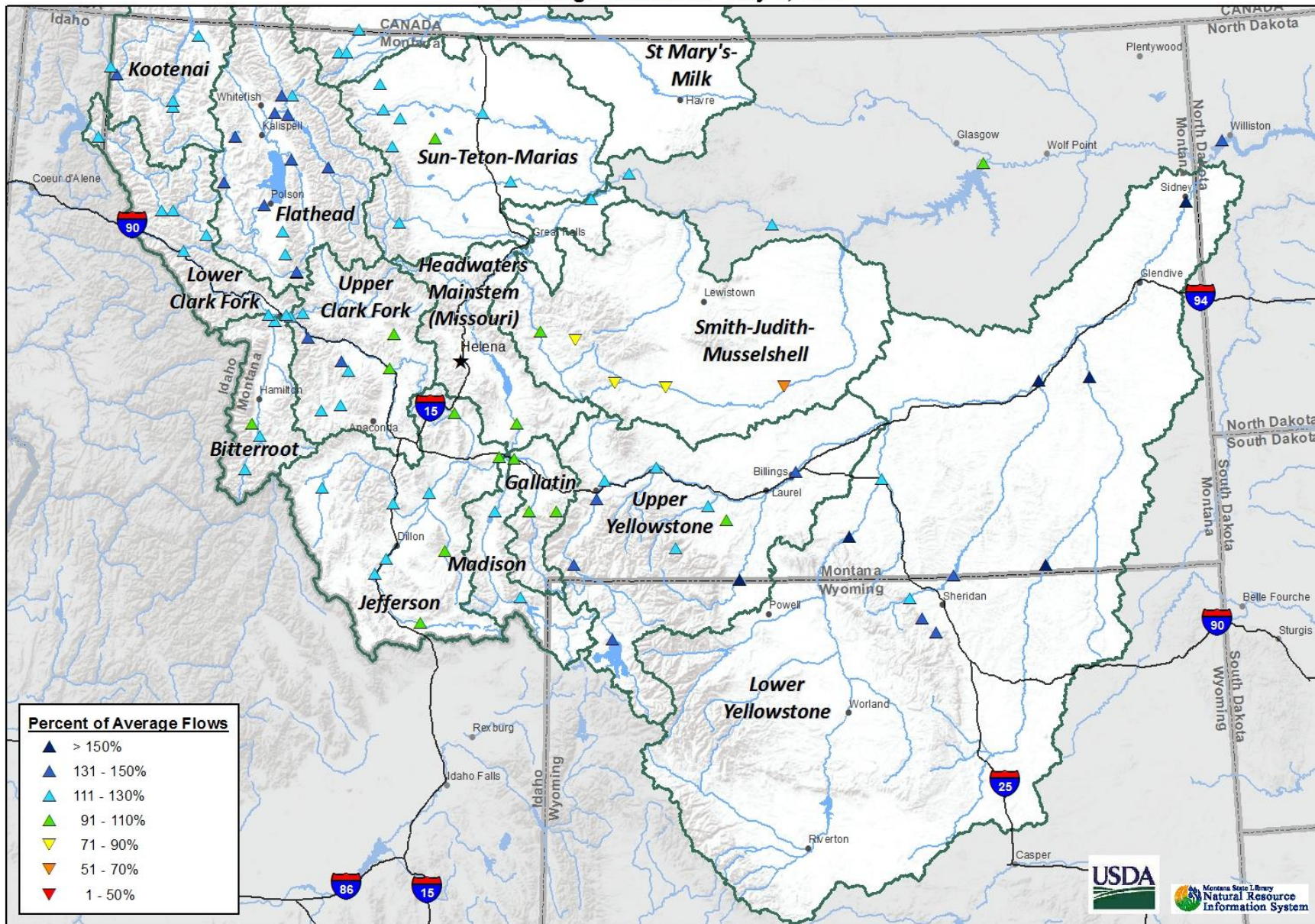
NOTE: Streamflow forecasts are issued for multiple points on rivers and streams within a major river basin and are given as a range of exceedance probabilities. Consult the individual river basin of interest to see the range of values for streams of interest.

*Highest point forecast is the highest 50% forecast of all forecast points within the basin

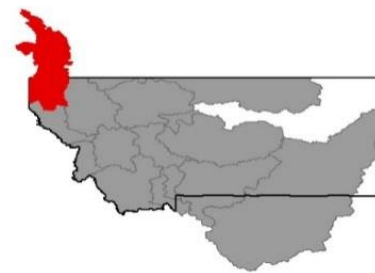
**Lowest point forecast is the lowest 50% forecast of all forecast points within the basin

***Basin Average Forecast is an average of all 50% forecasts within the basin

Montana Data Collection Office
Streamflow Forecast
Percentage of Normal - May 1, 2017



Kootenai River Basin



Over the month of April the Kootenai basin received above average precipitation at mountain SNOTEL sites for the third straight month, much of it falling as snow at the higher elevations. Garver Creek and Hawkins Lake SNOTELs in the headwaters of the Yaak River are currently reporting the highest water year-to-date precipitation for the October 1st to May 1st time period. Snowmelt has been confined to the lower elevations in the basin where gradual melt occurred over the month, but higher elevations continued to maintain, or gain, snow water during April. The high elevation Hawkins Lake and Stahl Peak SNOTEL sites experienced the second highest snow water equivalent gain for the month of April on record for those sites. Abundant precipitation this year and an above normal snowpack on May 1st has resulted in streamflow forecasts that look to be well above average for the May 1st – July 31st time period.

Kootenai River Basin Data Summary

Snowpack

	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
KOOTENAY in CANADA	129%	48%
KOOTENAI MAINSTEM	110%	65%
TOBACCO	138%	76%
FISHER	109%	62%
YAAK	149%	73%
KOOTENAI RIVER BASIN in MONTANA	121%	68%
KOOTENAI ab BONNERS FERRY	128%	61%
Basin-Wide Snowpack	121%	68%

Precipitation

	Monthly Percentage of Average	WYTD Percentage of 1981-2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	142%	140%	110%
Valley Precipitation	129%	194%	130%
Basin-Wide Precipitation	142%	141%	110%

*WYTD Precipitation is October 1st- Current

Reservoir Storage

	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Reservoir Storage	87%	40%	137%

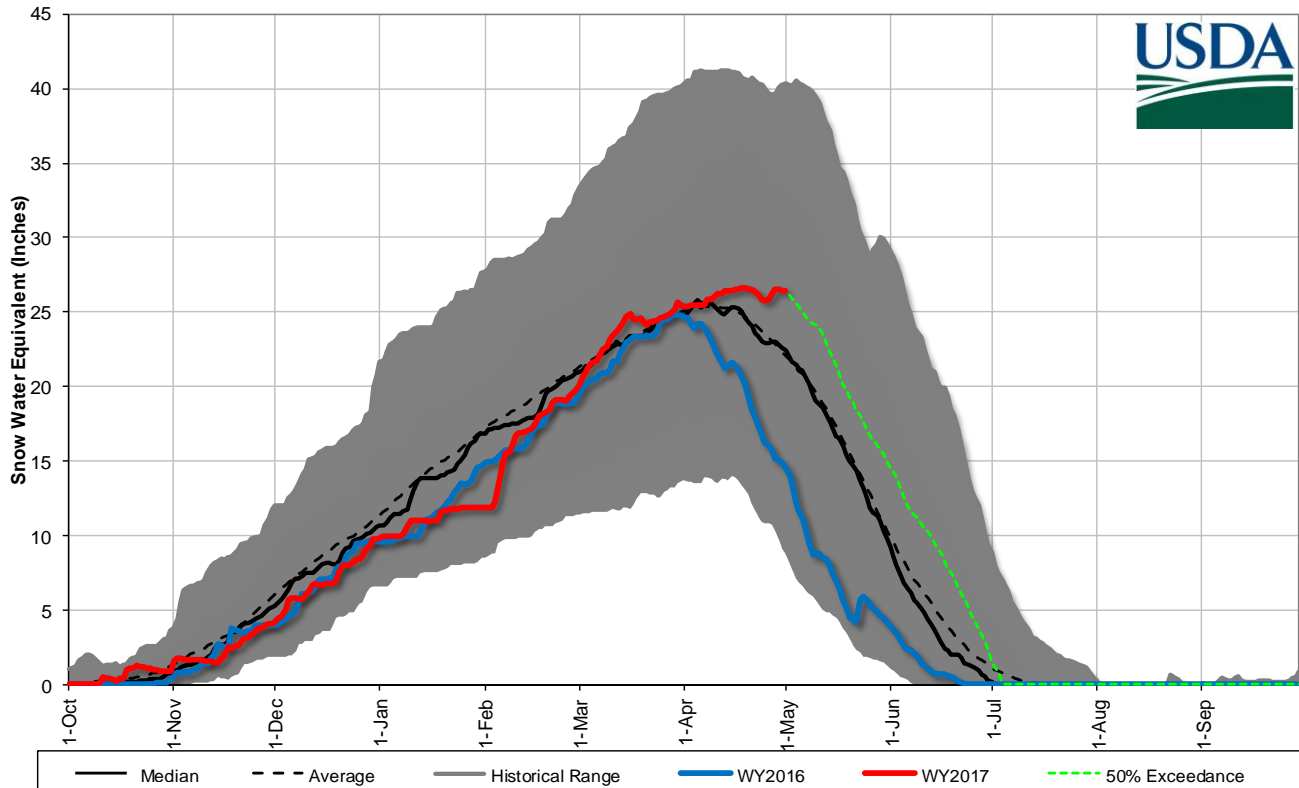
*See Reservoir Storage Table for storage in individual reservoirs

End of Month Storage

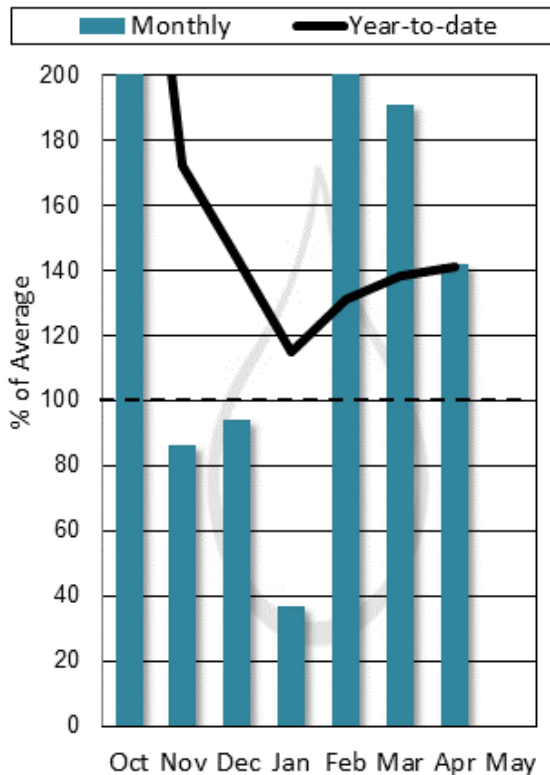
	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Lake Koocanusa	2275.9	3581.1	2614.0	5748.0	87%	40%

Kootenai River Basin Snowpack with Non-Exceedence Projections

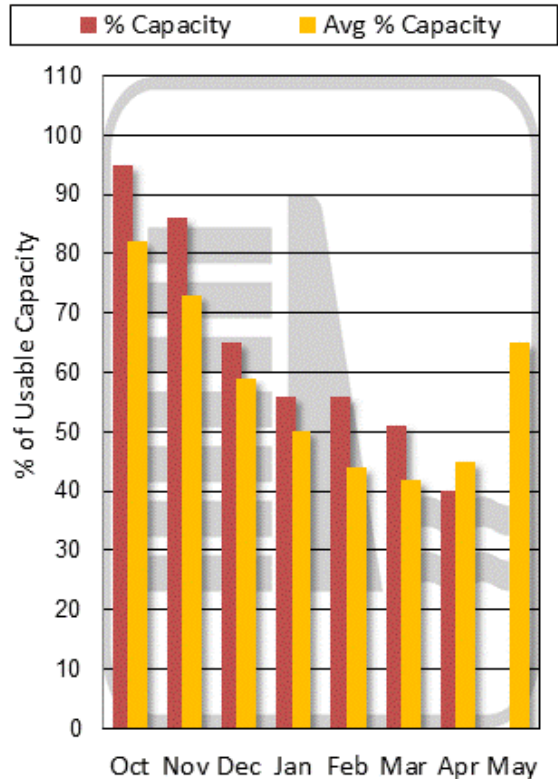
Based on provisional SNOTEL daily data as of 5/1/2017



Mountain and Valley Precipitation



End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

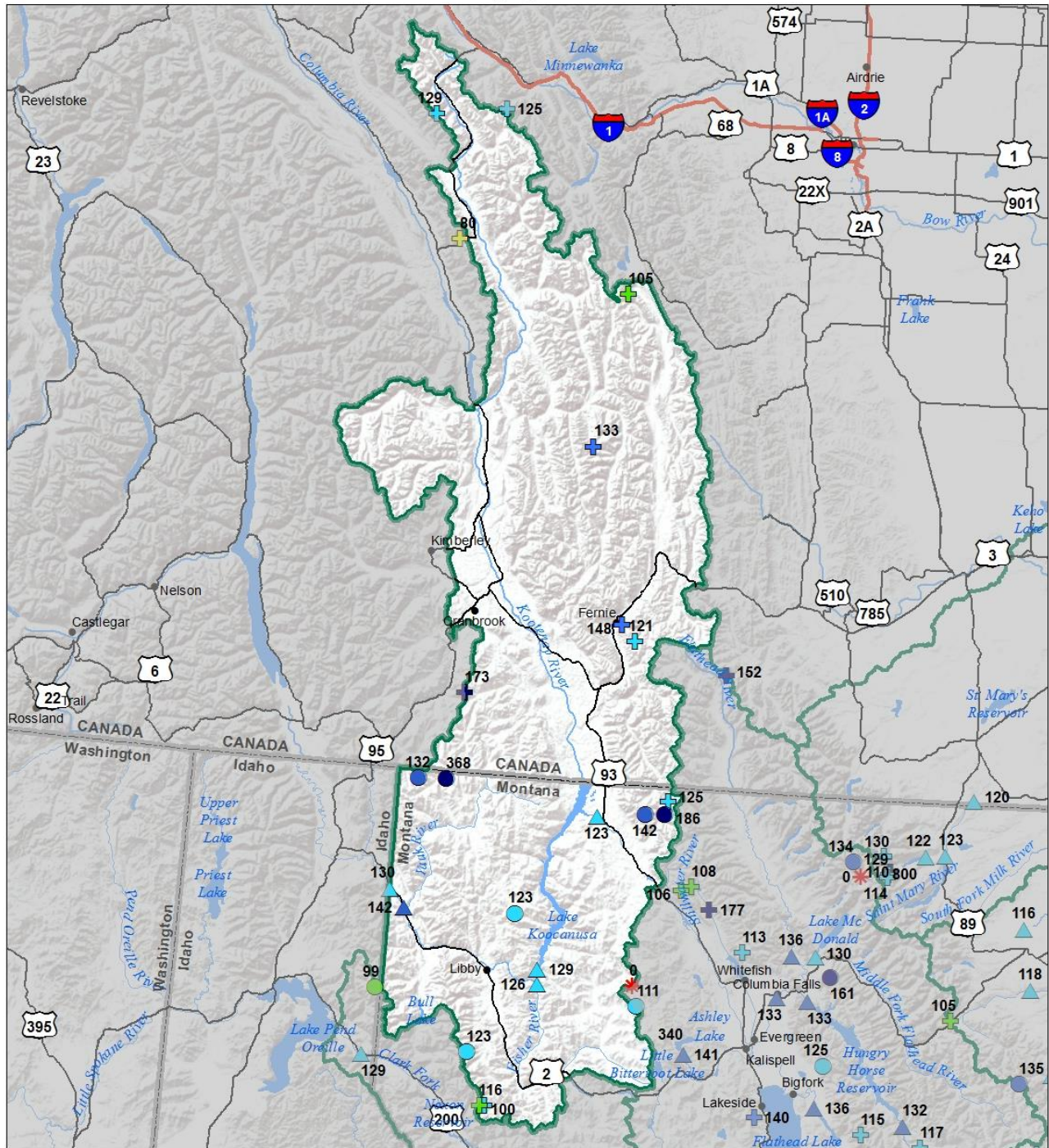
Kootenai River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Tobacco R nr Eureka	MAY-JUL	99	115	125	124%	136	152	101
	MAY-SEP	109	128	140	123%	153	171	114
Libby Reservoir Inflow ¹	MAY-JUL	5300	5900	6170	128%	6440	7040	4820
	MAY-SEP	6480	7110	7400	129%	7690	8320	5733
Fisher R nr Libby	MAY-JUL	135	158	174	128%	190	215	136
	MAY-SEP	147	172	189	126%	205	230	150
Yaak R nr Troy	MAY-JUL	365	415	450	145%	480	530	310
	MAY-SEP	385	435	470	142%	505	560	330
Kootenai R at Leonia ^{1,2}	MAY-JUL	6110	7030	7450	130%	7870	8790	5730
	MAY-SEP	7490	8360	8750	130%	9140	10000	6730

1) 90% and 10% exceedance probabilities are actually 95% and 5%

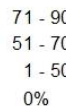
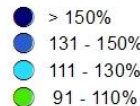
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Kootenai River Basin Streamflow Forecast, Snow Water Equivalent Percentage of Normal May 1, 2017

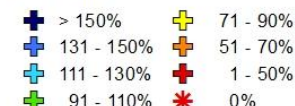


Snow Water Equivalent Percent of Normal

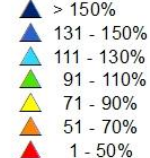
SNOTEL



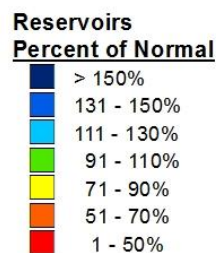
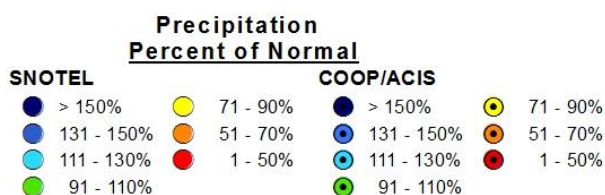
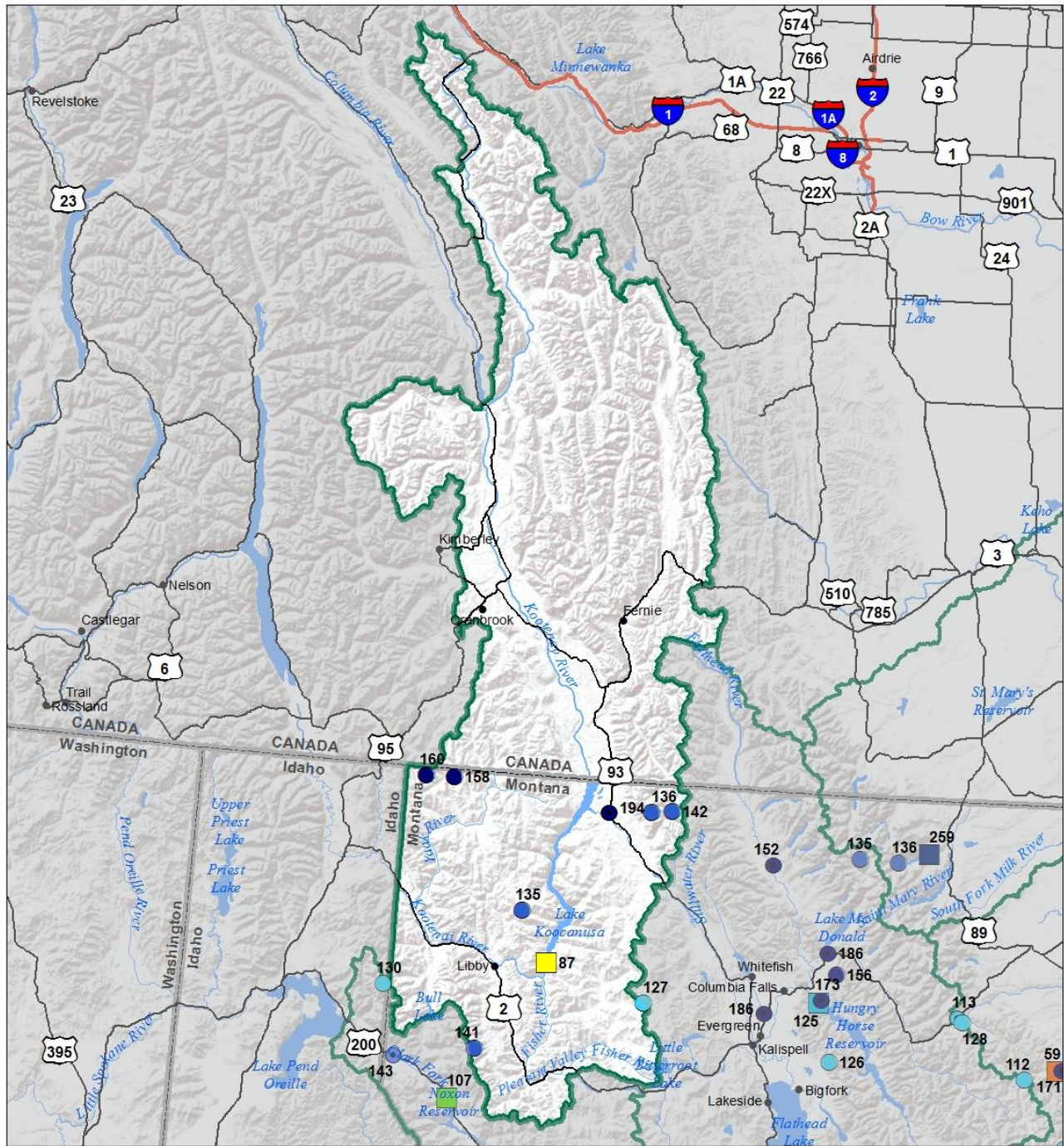
Snowcourse



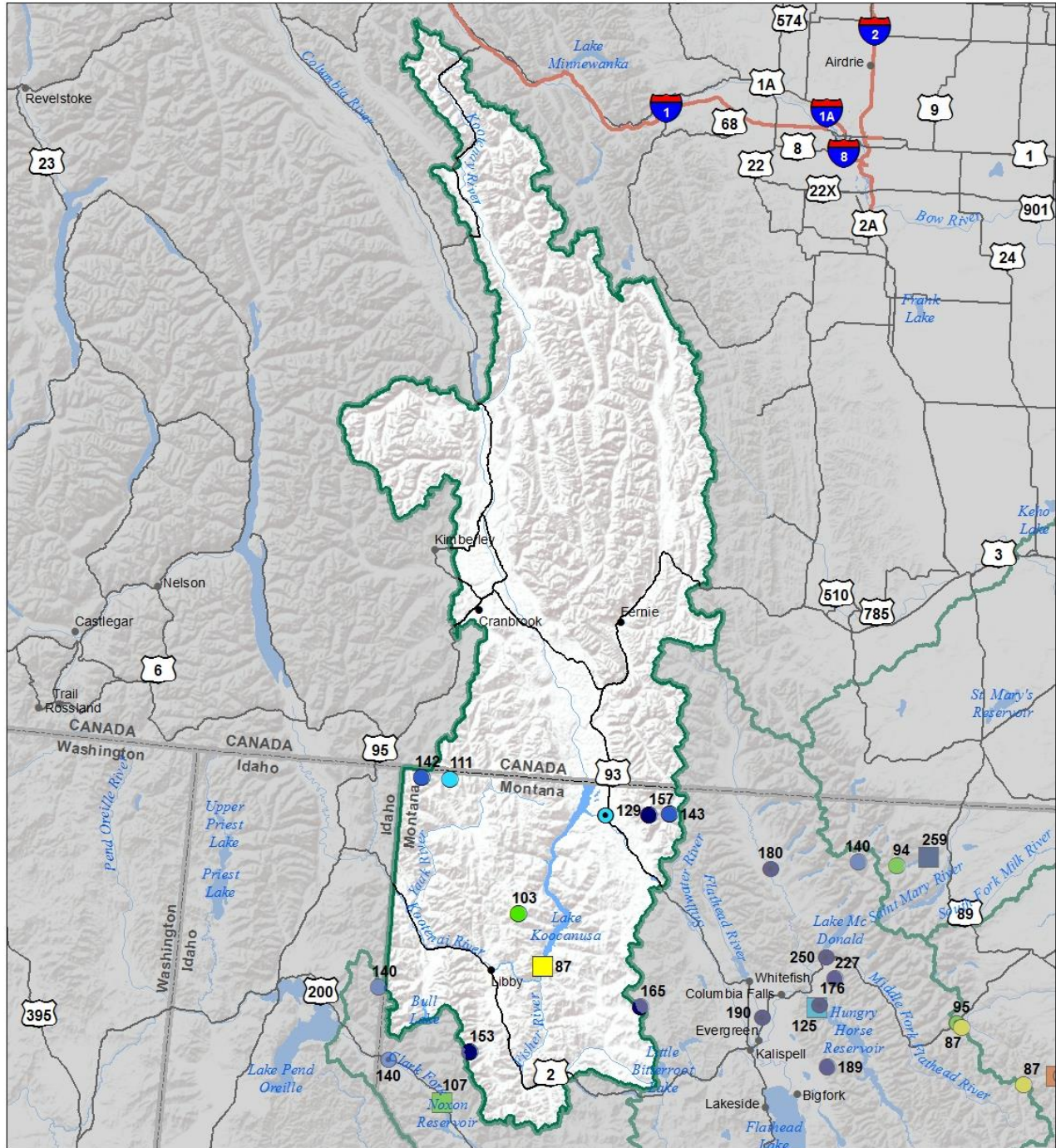
Streamflow Forecast Percent of Average Flows



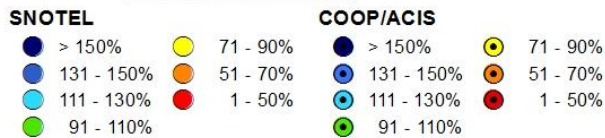
Kootenai River Basin Water Year to Date Precipitation and Reservoir Levels Percentage of Normal May 1, 2017



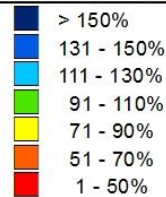
Kootenai River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)

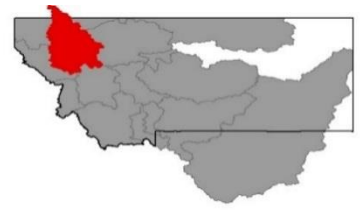


Precipitation
Percent of Normal



Reservoirs
Percent of Normal





Flathead River Basin

The wetness continues. The Coop weather station at the Kalispell airport came pretty close to setting a new record for April monthly precipitation, coming in just 0.01" shy, but still a solid second. Water Year precipitation for that site, starting October 1st is the highest in 118 years of observations. Three SNOTEL sites in the basin also came in second for April monthly precipitation (Emery Creek, Moss Peak and Bisson Creek) receiving 150 to 225% of average precipitation. Precipitation fell as rain at valley locations and as snow at many higher elevation SNOTEL sites. The Noisy Basin SNOTEL site set a new record for the month of April, recording 14.5" increase in snow water in the snowpack, over 300% of normal for the month. Low elevation measurement locations melted gradually for the month and peaked mid-March, while upper elevations continue to increase. Well above average precipitation this year and excellent snow totals on May 1st has resulted in streamflow forecasts that are well above average for the April 1st – July 31st time period.

Flathead River Basin Data Summary

Snowpack	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
NF FLATHEAD in CANADA	%	%
NF FLATHEAD in MONTANA	126%	75%
MIDDLE FORK FLATHEAD	133%	65%
SOUTH FORK FLATHEAD	118%	79%
STILLWATER-WHITEFISH	117%	71%
SWAN	118%	89%
MISSION VALLEY	133%	77%
LITTLE BITTERROOT-ASHLEY	243%	0%
JOCKO	125%	81%
FLATHEAD in MONTANA	125%	74%
Basin-Wide Snowpack	125%	74%

Precipitation	Monthly Percentage of Average	WYTD Percentage of 1981-2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	145%	135%	101%
Valley Precipitation	175%	191%	117%
Basin-Wide Precipitation	146%	136%	101%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

Reservoir Storage	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Reservoir Storage	124%	74%	130%

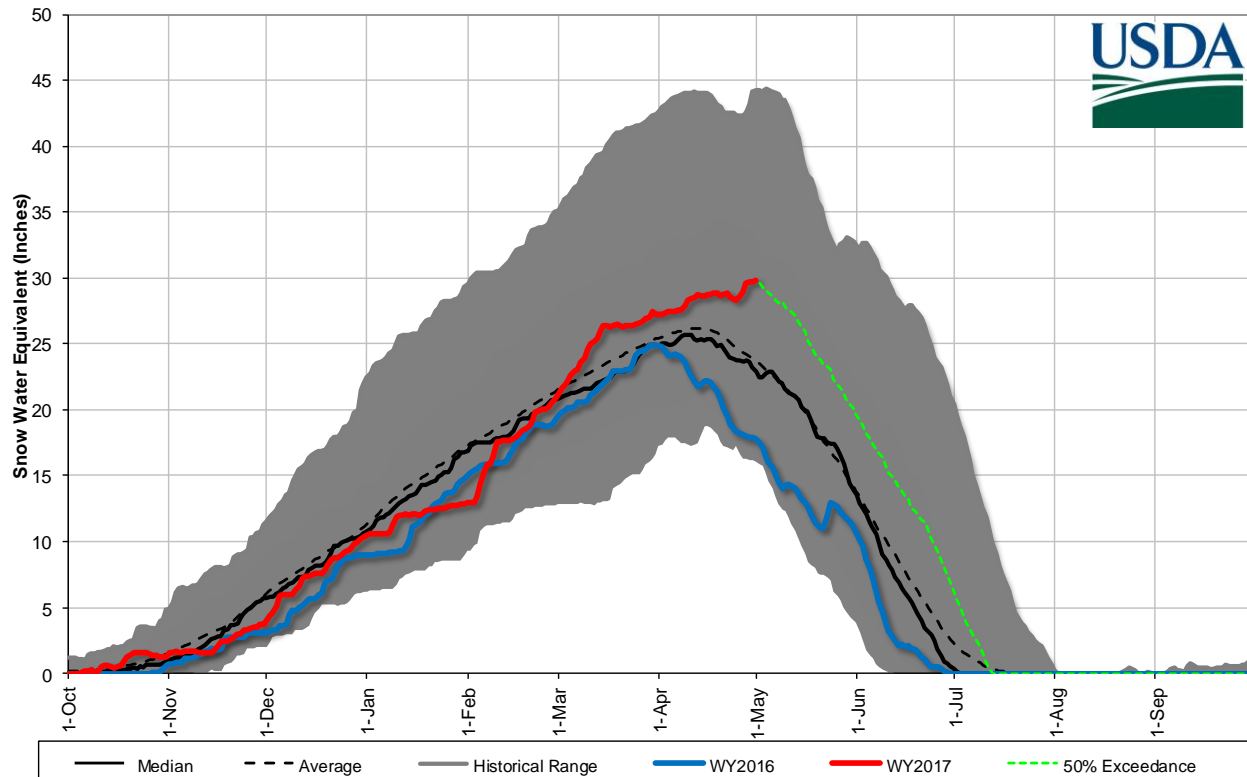
*See Reservoir Storage Table for storage in individual reservoirs

End of Month Storage

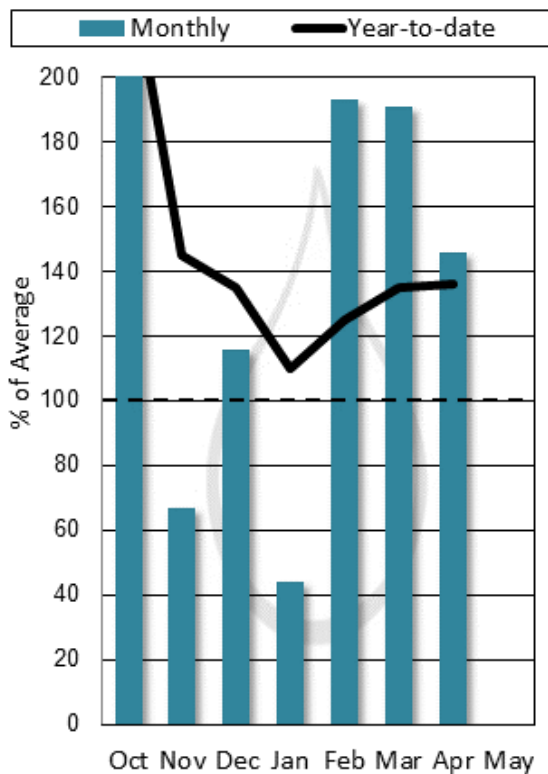
	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Camas (4)	38.1	31.9	26.9	45.2	142%	84%
Lower Jocko Lake	1.3	3.3	0.8	6.4	149%	20%
Mission Valley (8)	44.3	40.3	40.1	100.0	110%	44%
Hungry Horse Lake	2739.1	2845.7	2188.0	3451.0	125%	79%
Flathead Lake	1186.6	1274.5	971.5	1791.0	122%	66%

Flathead River Basin Snowpack with Non-Exceedence Projections

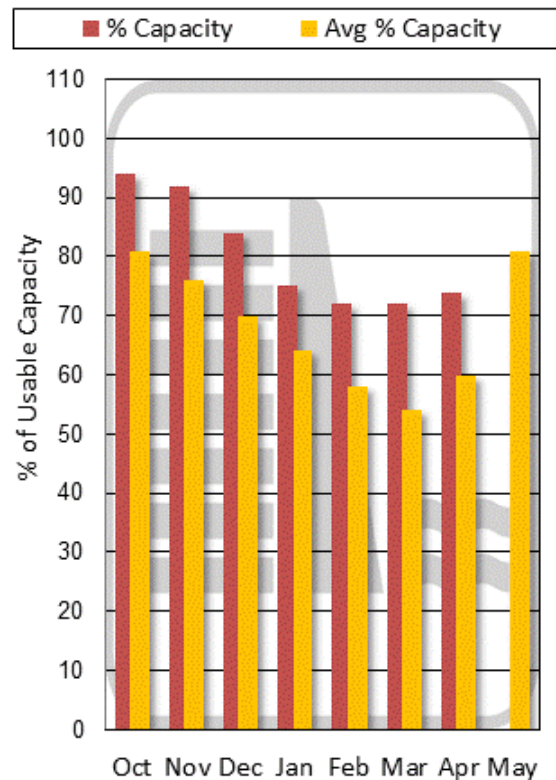
Based on provisional SNOTEL daily data as of 5/1/2017



Mountain and Valley Precipitation



End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

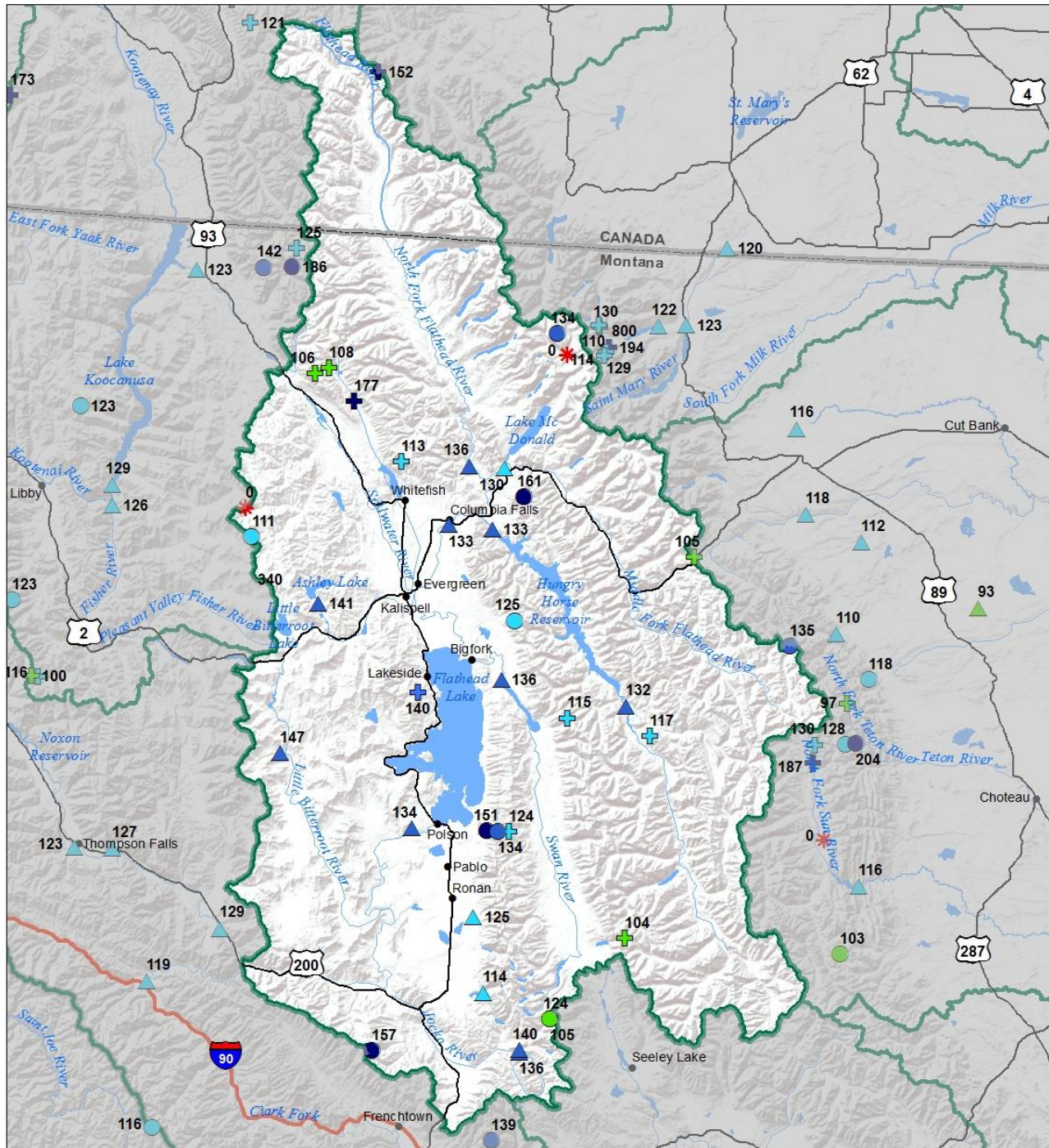
Flathead River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
NF Flathead R nr Columbia Falls	MAY-JUL	1620	1730	1810	137%	1890	2000	1320
	MAY-SEP	1800	1930	2010	136%	2100	2230	1480
MF Flathead R nr West Glacier	MAY-JUL	1470	1600	1690	130%	1780	1920	1300
	MAY-SEP	1620	1760	1860	130%	1950	2090	1430
Sf Flathead R nr Hungry Horse	MAY-JUL	1220	1310	1370	132%	1430	1520	1040
	MAY-SEP	1300	1400	1460	132%	1520	1620	1110
Hungry Horse Reservoir Inflow ^{1,2}	MAY-JUL	1810	2010	2110	134%	2200	2400	1580
	MAY-SEP	1910	2140	2240	133%	2350	2570	1690
Flathead R at Columbia Falls ²	MAY-JUL	5160	5500	5740	134%	5970	6320	4290
	MAY-SEP	5620	6000	6260	133%	6520	6910	4720
Ashley Ck nr Marion ²	MAY	2.6	3.2	3.6	138%	4.1	4.7	2.6
	MAY-JUL	3.9	4.9	5.5	141%	6.1	7.1	3.9
Swan R nr Bigfork	MAY-JUL	535	575	600	138%	630	670	435
	MAY-SEP	615	665	695	136%	730	775	510
Flathead Lake Inflow ^{1,2}	MAY-JUL	5710	6340	6620	134%	6900	7530	4940
	MAY-SEP	6170	6880	7210	134%	7530	8250	5400
Mill Ck ab Bassoo ck nr Niarada	MAY-JUL	3.1	3.9	4.4	152%	4.9	5.7	2.9
	MAY-SEP	3.4	4.2	4.7	147%	5.2	6	3.2
South Crow Ck nr Ronan	MAY-JUL	9.7	10.8	11.6	126%	12.4	13.6	9.2
	MAY-SEP	11.1	12.4	13.3	125%	14.2	15.6	10.6
Mission Ck nr St. Ignatius	MAY-JUL	24	26	28	117%	29	31	24
	MAY-SEP	29	32	33	114%	35	38	29
SF Jocko R nr Arlee	MAY-JUL	35	38	40	138%	42	45	29
	MAY-SEP	39	43	45	136%	47	51	33
NF Jocko R bl Tabor Feeder Canal	MAY-JUL	37	39	40	143%	41	43	28
	MAY-SEP	39	41	42	140%	44	46	30

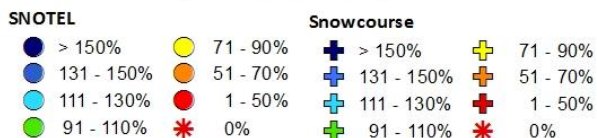
1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

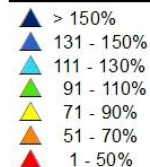
Flathead River Basin Streamflow Forecast, Snow Water Equivalent Percentage of Normal May 1, 2017



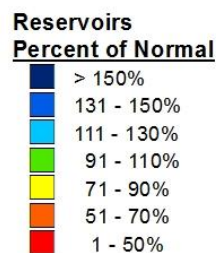
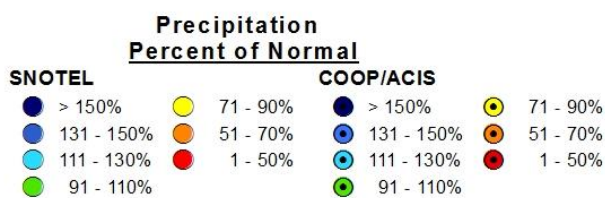
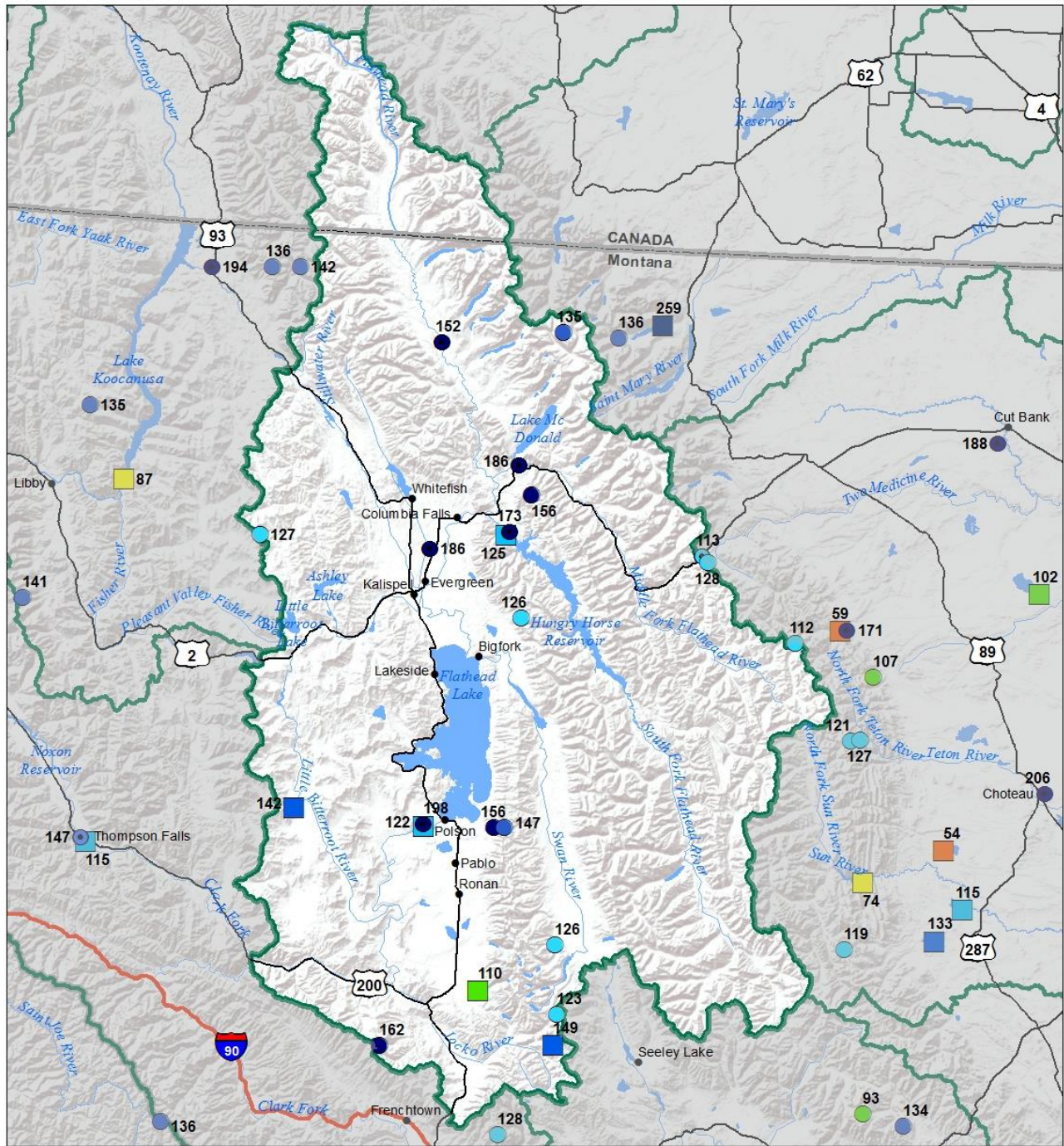
Snow Water Equivalent Percent of Normal



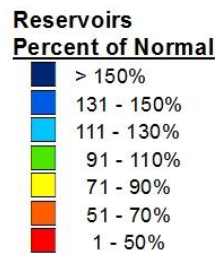
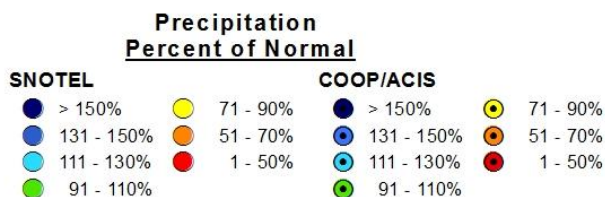
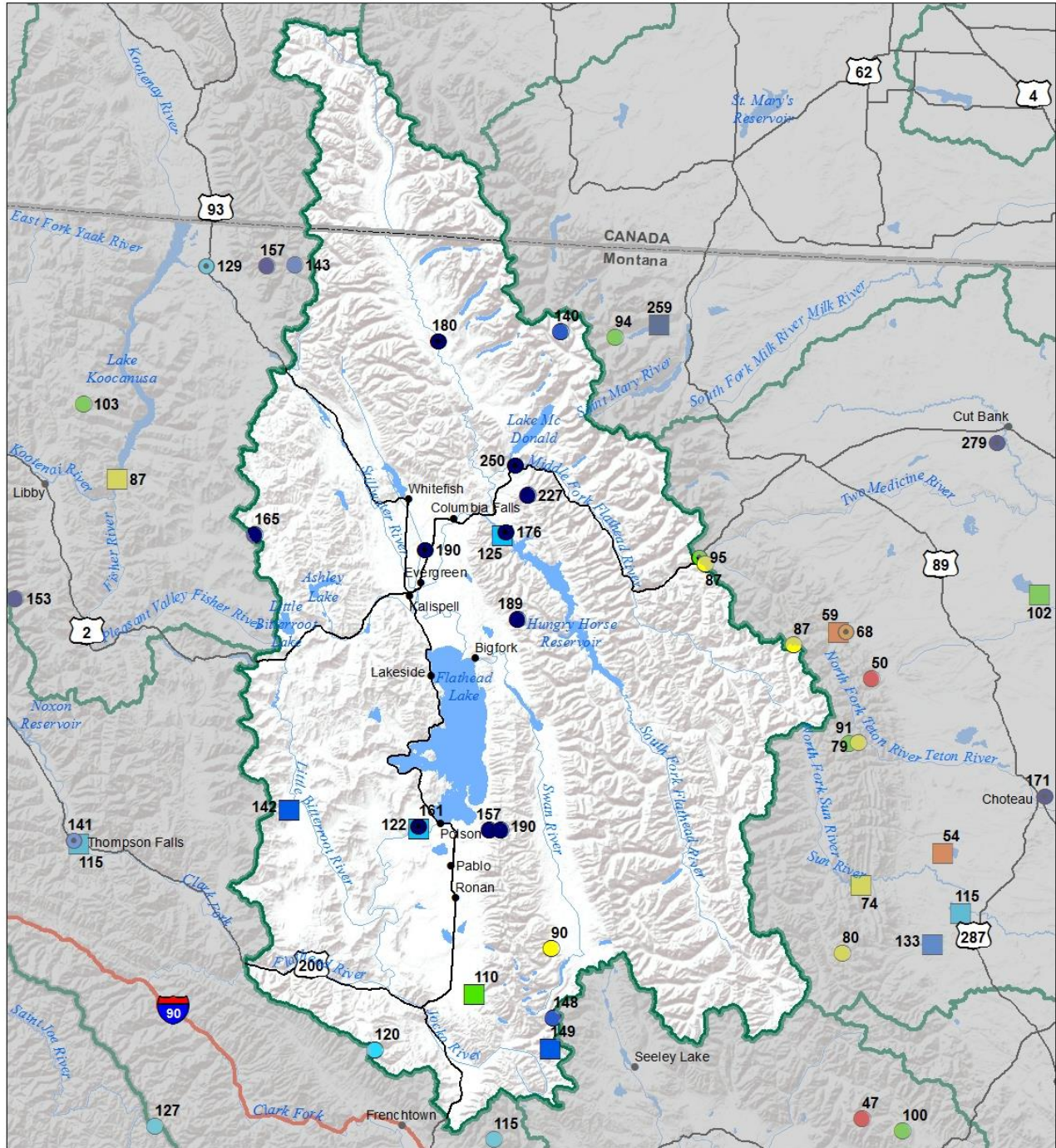
Streamflow Forecast Percent of Average Flows



Flathead River Basin Water Year to Date Precipitation and Reservoir Levels Percentage of Normal May 1, 2017



Flathead River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)



Upper Clark Fork River Basin



The storm patterns that dropped well above average precipitation west of the Divide in the northwest basins didn't extend into the Upper Clark Fork this month. Precipitation for the month was near to slightly above average at many mountain locations. Low elevation snowpack in the basin transitioned to active melt during mid-March, and many locations melted out during the month of April. The snowpack at higher elevations above ~6500' was basically in maintenance mode through the month with little to no melt, but a few locations saw some additions to the season totals from the storms that came through. Snow totals for May 1st are generally near to above normal in the Blackfoot, Rock Creek and Flint Creek drainages. There is one dry area in the basin, the headwaters of the Upper Clark Fork River near Butte has snowpack which is below normal for this date. The bulk of the snow water from the mountain snowpack remains to enter the river system, above average precipitation this water year and near to above average snowpack on May 1 has resulted in streamflow forecasts that are above average for the May 1st – July 31st time period.

Upper Clark Fork River Basin Data Summary

Snowpack

	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
CLARK FORK ab FLINT CREEK	96%	84%
FLINT CREEK	121%	77%
ROCK CREEK	116%	78%
CLARK FORK ab BLACKFOOT	105%	79%
BLACKFOOT	120%	77%
Basin-Wide	109%	78%

Precipitation

	Monthly Percentage of Average	WYTD Percentage of 1981-2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	103%	112%	95%
Valley Precipitation	140%	135%	103%
Basin-Wide Precipitation	105%	113%	95%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

Reservoir Storage

	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	105%	84%	109%

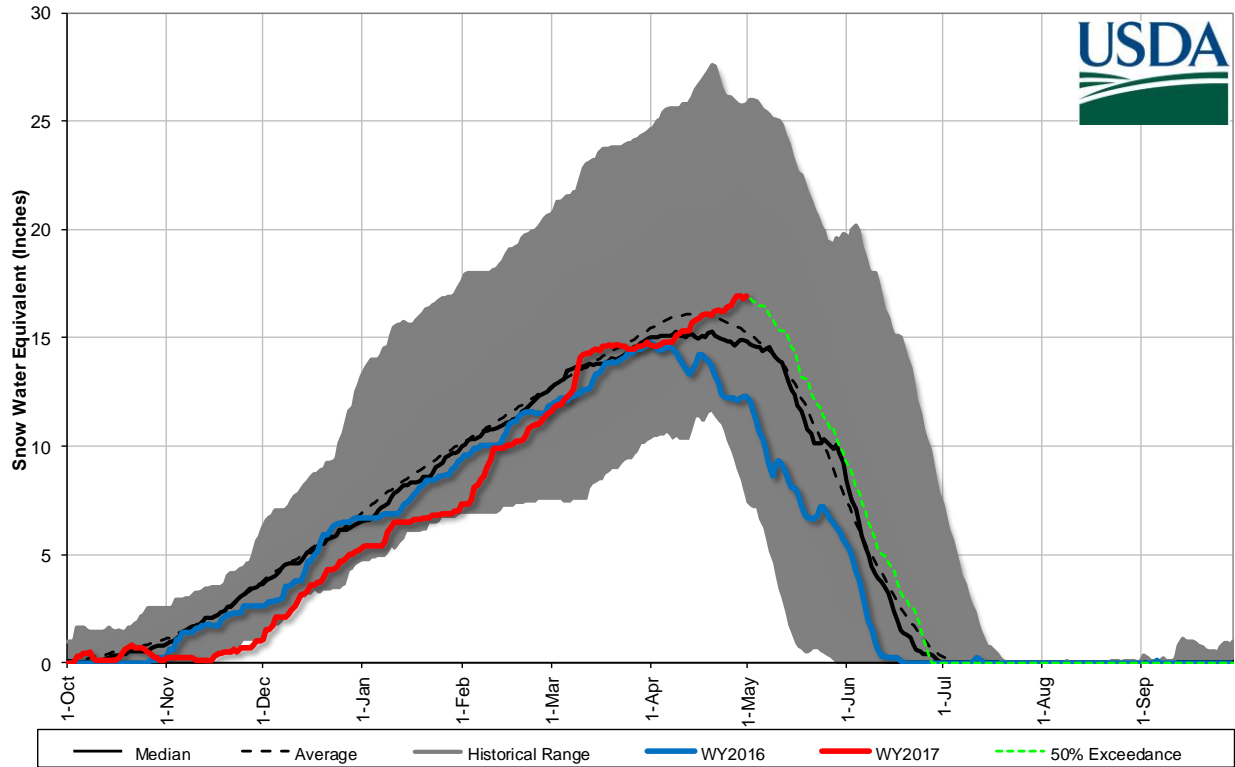
*See Reservoir Storage Table for storage in individual reservoirs

End of Month Storage

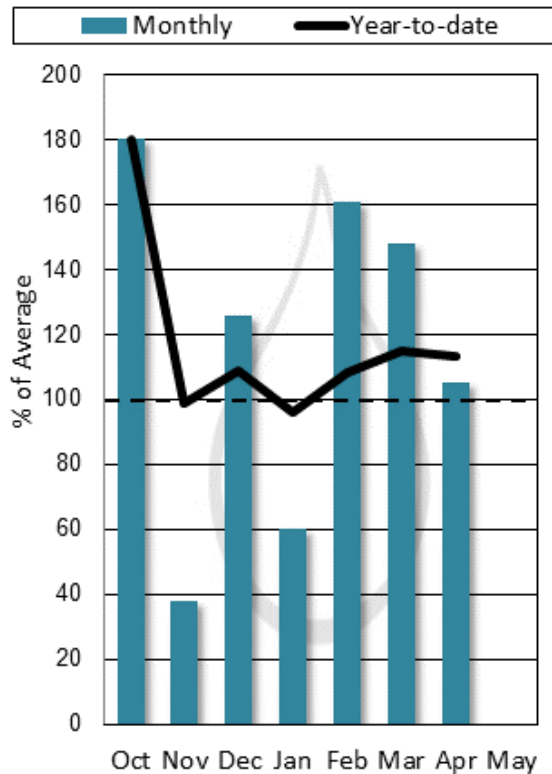
	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
East Fork Rock Creek Res	9.7	11.1	9.2	15.6	105%	105%
Georgetown Lake	28.8	30.8	28.2	31.0	102%	102%
Lower Willow Creek Reservoir		4.6	4.1	4.9		
Nevada Creek Res	11.3	9.8	9.9	12.6	114%	114%

Upper Clark Fork River Basin Snowpack with Non-Exceedence Projections

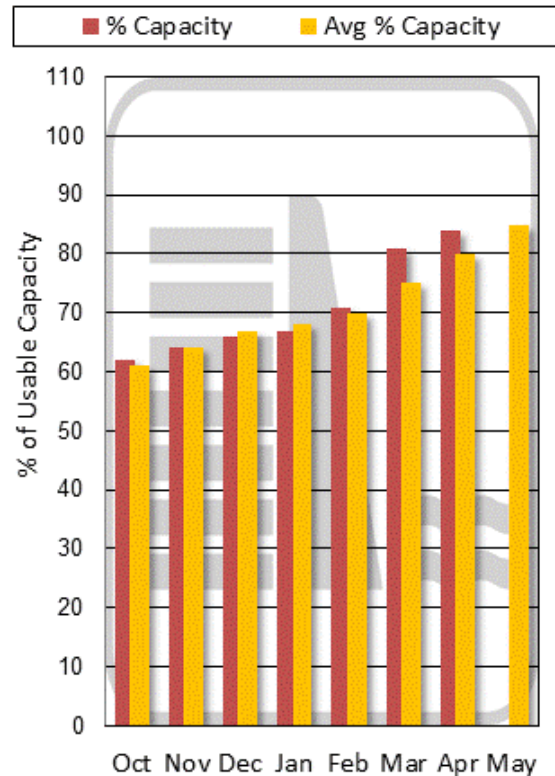
Based on provisional SNOTEL daily data as of 5/1/2017



Mountain and Valley Precipitation



End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

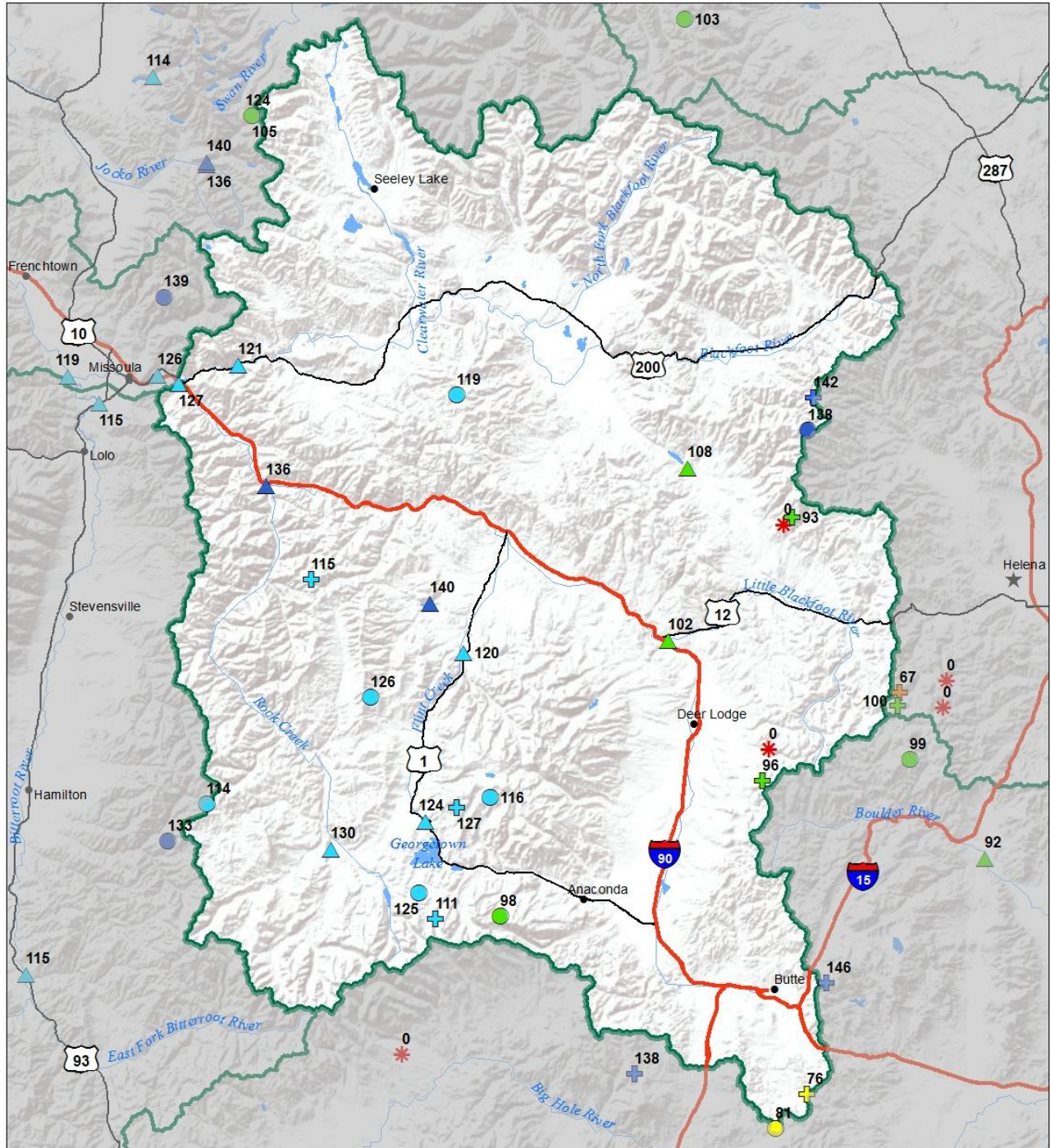
Upper Clark Fork River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Little Blackfoot nr Garrison	MAY-JUL	32	47	57	102%	68	83	56
	MAY-SEP	36	53	64	102%	75	92	63
Flint Ck nr Southern Cross	MAY-JUL	7.6	10.8	12.9	123%	15.1	18.3	10.5
	MAY-SEP	9.1	13.1	15.8	124%	18.5	23	12.7
Flint Ck bl Boulder Ck	MAY-JUL	34	46	54	120%	63	75	45
	MAY-SEP	47	61	71	120%	80	95	59
Lower Willow Ck Reservoir Inflow ²	MAY	3.9	5.6	6.8	136%	8	9.7	5
	MAY-JUL	7.6	10.1	11.9	140%	13.6	16.1	8.5
MF Rock Ck nr Philipsburg	MAY-JUL	52	62	70	132%	77	88	53
	MAY-SEP	58	70	78	130%	86	98	60
Rock Ck nr Clinton	MAY-JUL	215	265	300	136%	335	385	220
	MAY-SEP	250	305	340	136%	375	430	250
Clark Fork R ab Milltown	MAY-JUL	345	480	575	129%	670	805	445
	MAY-SEP	425	575	675	127%	780	930	530
Nevada Ck nr Helmville	MAY	2.5	4.8	6.3	121%	7.8	10.1	5.2
	MAY-JUL	4.8	9	11.9	108%	14.8	19.1	11
Blackfoot R nr Bonner	MAY-JUL	590	675	730	124%	785	870	590
	MAY-SEP	670	760	820	121%	880	970	675
Clark Fork R ab Missoula	MAY-JUL	965	1180	1320	128%	1460	1670	1030
	MAY-SEP	1130	1350	1510	126%	1660	1890	1200

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

**Upper Clark Fork River Basin
Streamflow Forecast, Snow Water Equivalent
Percentage of Normal
May 1, 2017**



**Snow Water Equivalent
Percent of Normal**

SNOTEL

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

Snowcourse

- ⊕ > 150%
- ⊕ 131 - 150%
- ⊕ 111 - 130%
- ⊕ 91 - 110%

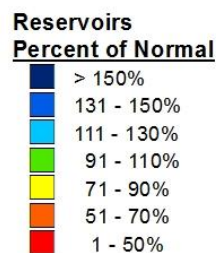
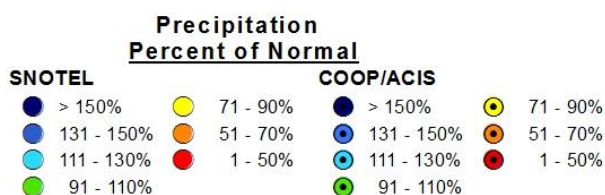
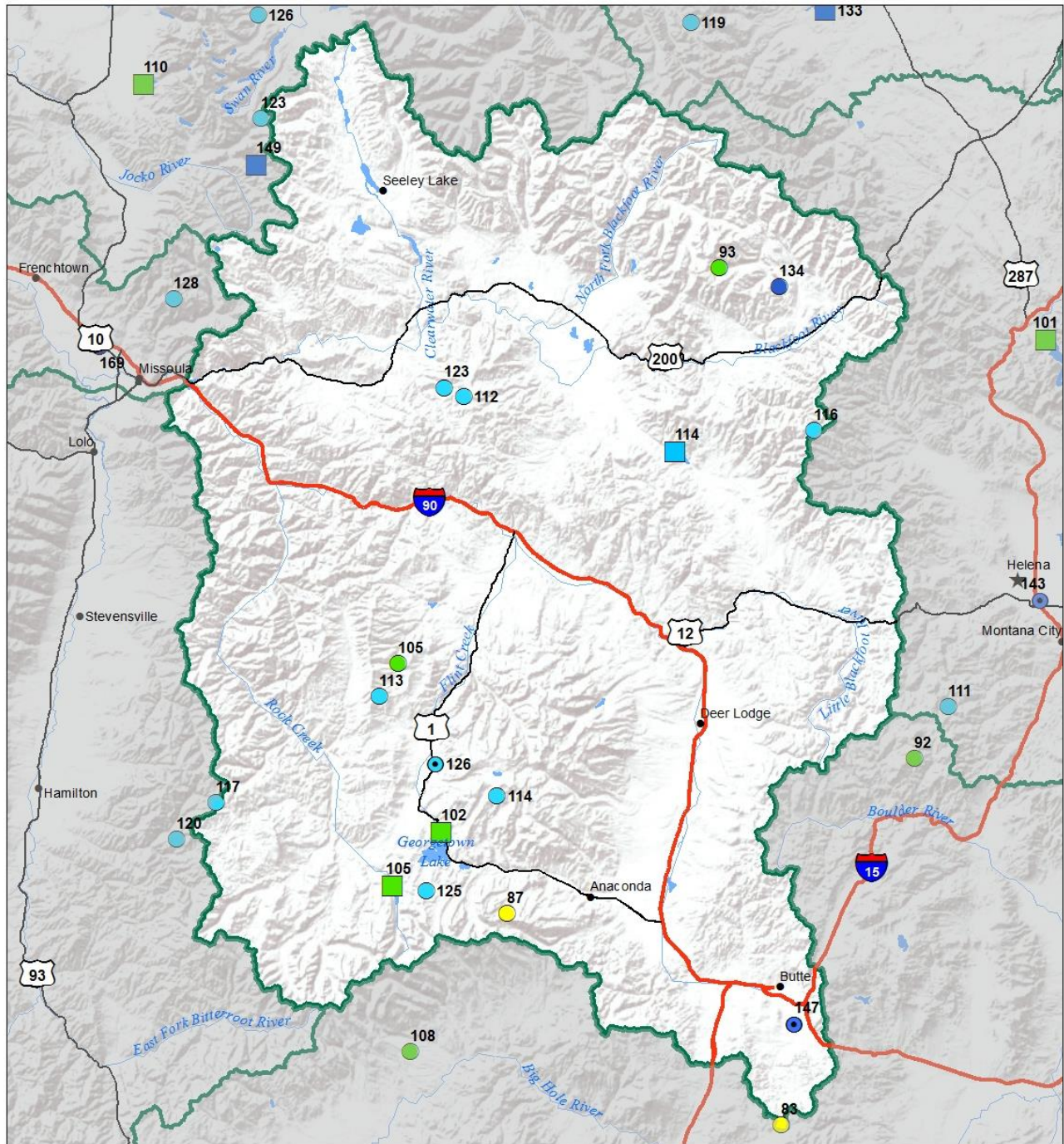
- ⊕ 71 - 90%
- ⊕ 51 - 70%
- ⊕ 1 - 50%
- ⊕ 0%

**Streamflow Forecast
Percent of Average Flows**

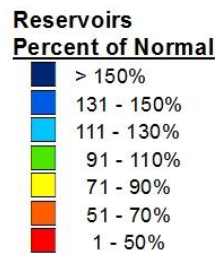
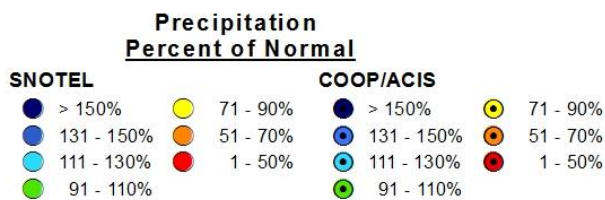
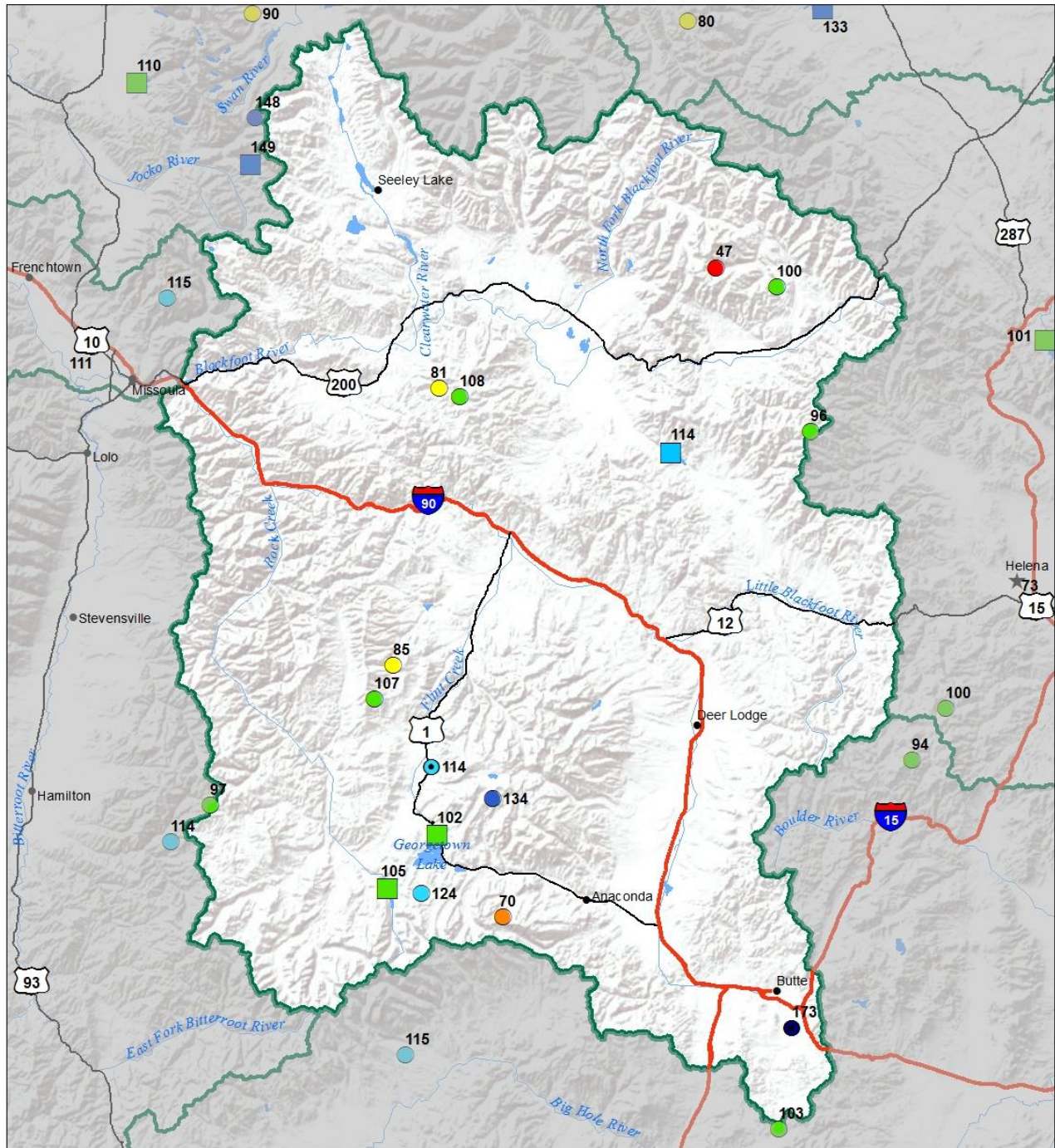
- ▲ > 150%
- ▲ 131 - 150%
- ▲ 111 - 130%
- ▲ 91 - 110%
- ▲ 71 - 90%
- ▲ 51 - 70%
- ▲ 1 - 50%



Upper Clark Fork River Basin Water Year to Date Precipitation and Reservoir Levels Percentage of Normal May 1, 2017



**Upper Clark Fork River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)**



Bitterroot River Basin



Snowpack in the Bitterroot River basin held steady, or gained, at high elevation during the month of April and are still increasing as of May 1st. Lower elevations, which began their seasonal melt during the middle of March, experienced gradual melt over the course of the month. Mountain precipitation came in both the frozen and liquid form over the month and was near to slightly below average at most locations. April was average regarding precipitation but above average early fall and winter precipitation resulted in water year totals for the basin that are above average. Both February and March brought substantial mountain snowfall to the area. Early snowmelt at the lower elevations during March lead to increases in flows in the Bitterroot River and flows have remained above average through the month of April. Above normal snowpack totals for May 1 and well above average water year precipitation has resulted in streamflow forecasts that are above average for the May 1st – July 31st time period.

Bitterroot River Basin Data Summary

Snowpack

	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
WEST FORK BITTERROOT	118%	83%
EAST SIDE BITTERROOT	119%	74%
WEST SIDE BITTERROOT	127%	72%
Basin-Wide	122%	70%

Precipitation

	Monthly Percentage of Average	WYTD Percentage of 1981- 2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	98%	117%	96%
Valley Precipitation	%	%	%
Basin-Wide Precipitation	98%	117%	96%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

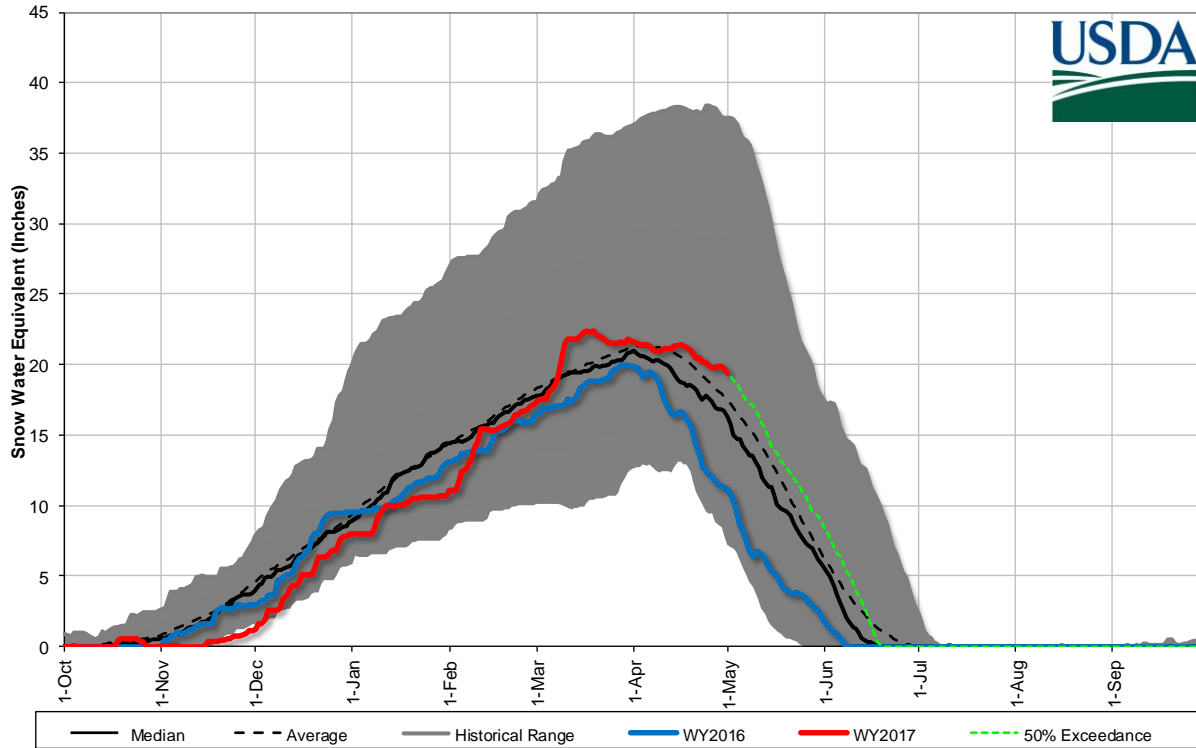
	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	124%	76%	153%

*See Reservoir Storage Table for storage in individual reservoirs

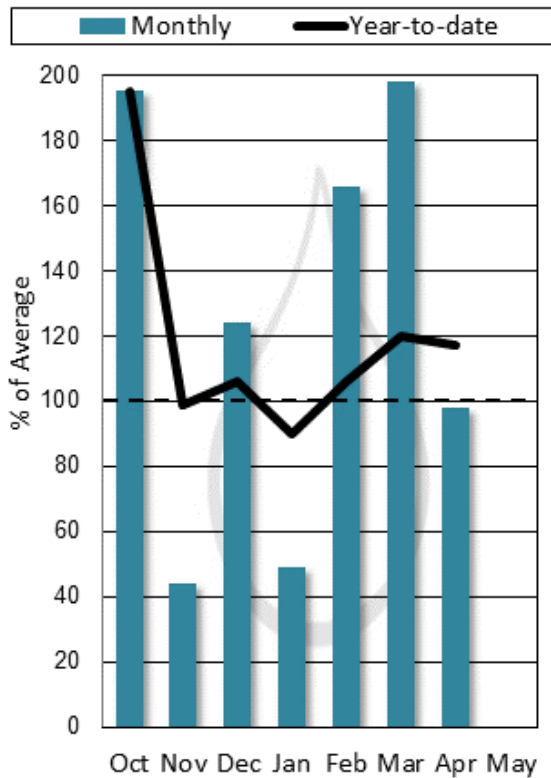
End of Month Storage

	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Painted Rocks Lake	23.6	32.4	18.7	31.7	126%	75%
Lake Como	26.8	30.1	22.1	34.9	121%	77%

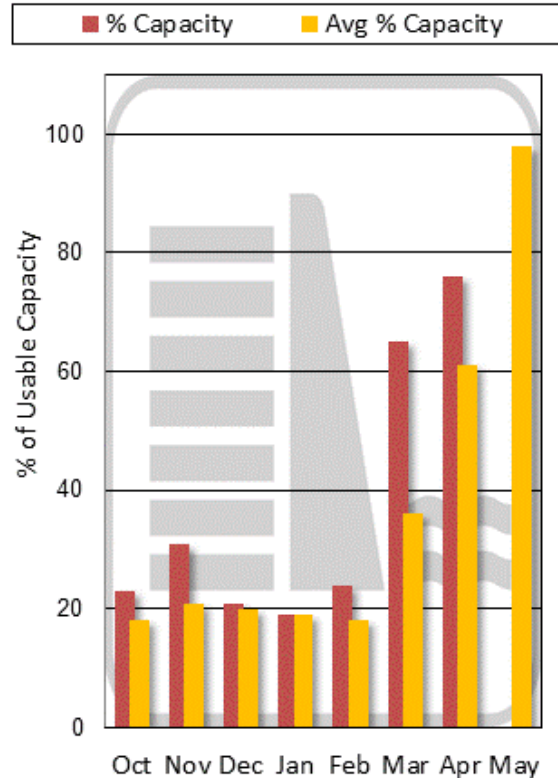
Bitterroot River Basin Snowpack with Non-Exceedence Projections
Based on provisional SNOTEL daily data as of 5/1/2017



**Mountain and Valley
Precipitation**



**End of Month Reservoir
Storage**



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

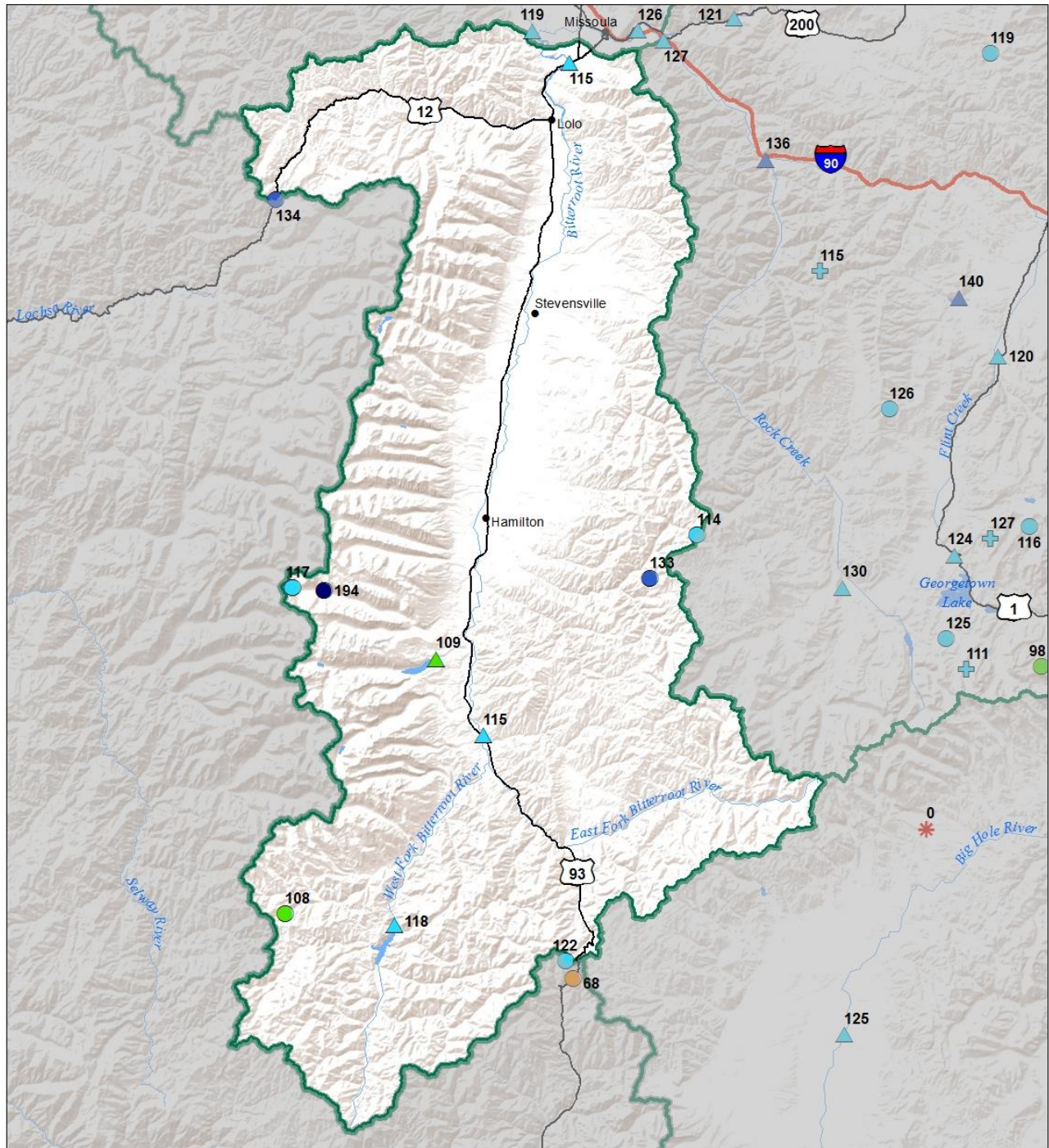
Bitterroot River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
WF Bitterroot R Nr Conner ²	MAY-JUL	94	114	128	117%	143	163	109
	MAY-SEP	99	124	141	118%	158	183	120
Bitterroot R Nr Darby	MAY-JUL	310	370	410	109%	450	515	375
	MAY-SEP	365	430	470	115%	515	575	410
Como Reservoir Inflow ²	MAY-JUL	59	67	71	108%	76	83	66
	MAY-SEP	63	70	75	109%	80	88	69
Bitterroot R nr Missoula	MAY-JUL	920	1050	1140	115%	1230	1360	990
	MAY-SEP	1010	1150	1250	115%	1350	1490	1090

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Bitterroot River Basin
Streamflow Forecast, Snow Water Equivalent
Percentage of Normal
May 1, 2017



Snow Water Equivalent
Percent of Normal

SNOTEL

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

Snowcourse

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

Streamflow Forecast
Percent of Average Flows

- ▲ > 150%
- ▲ 131 - 150%
- ▲ 111 - 130%
- ▲ 91 - 110%
- ▲ 71 - 90%
- ▲ 51 - 70%
- ▲ 1 - 50%

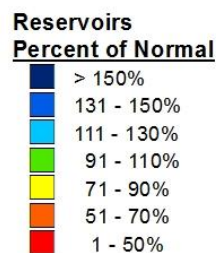
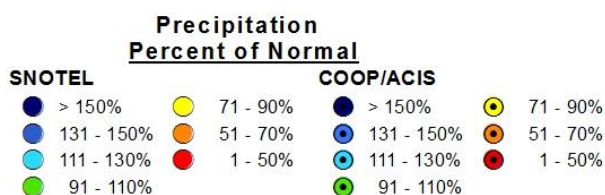
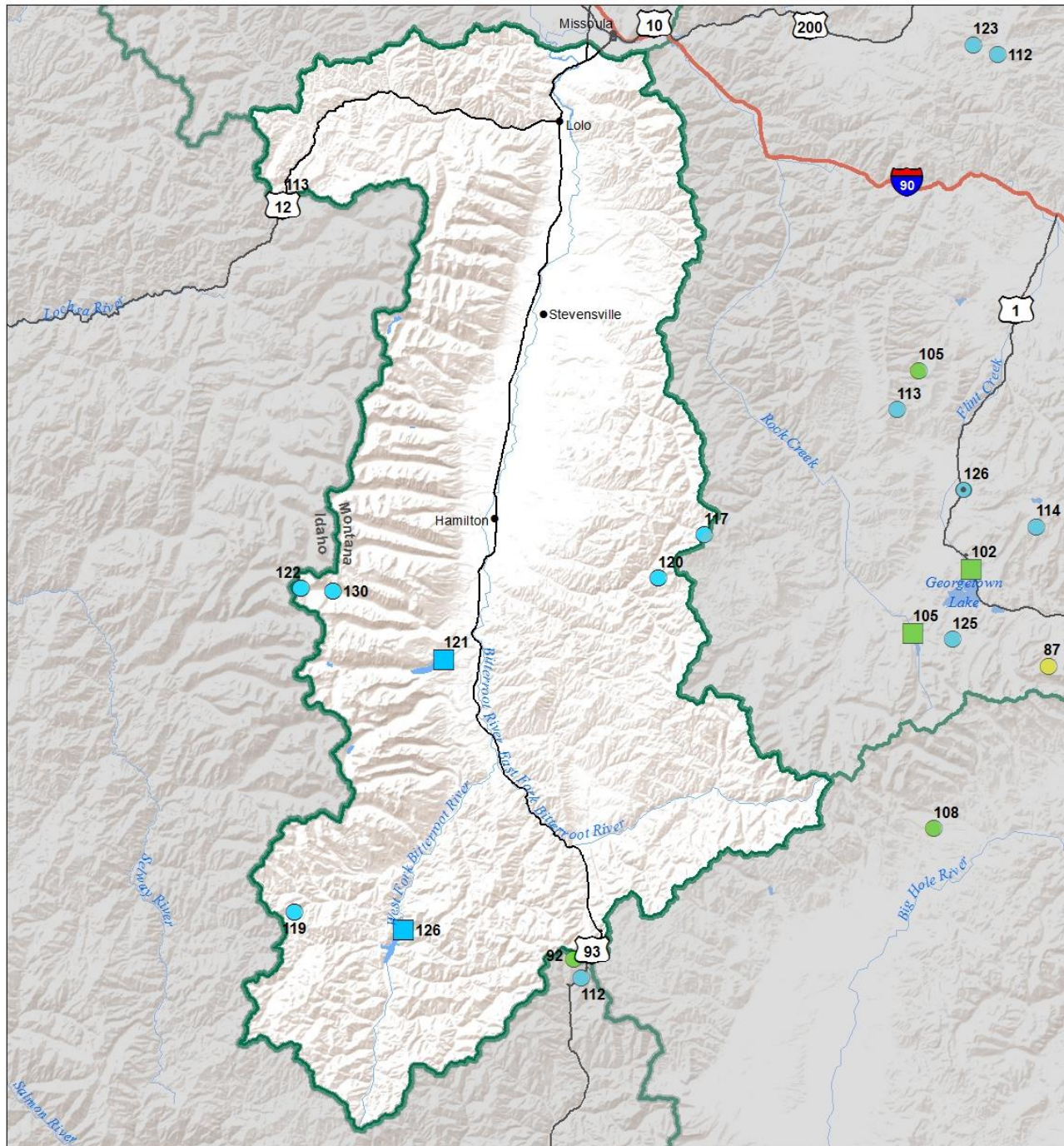


Bitterroot River Basin

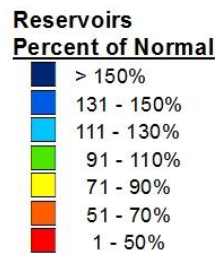
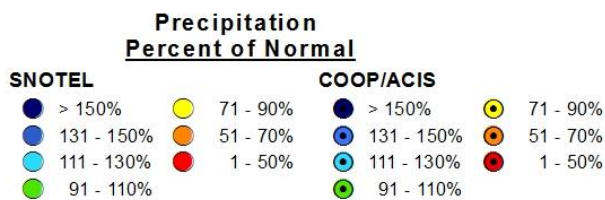
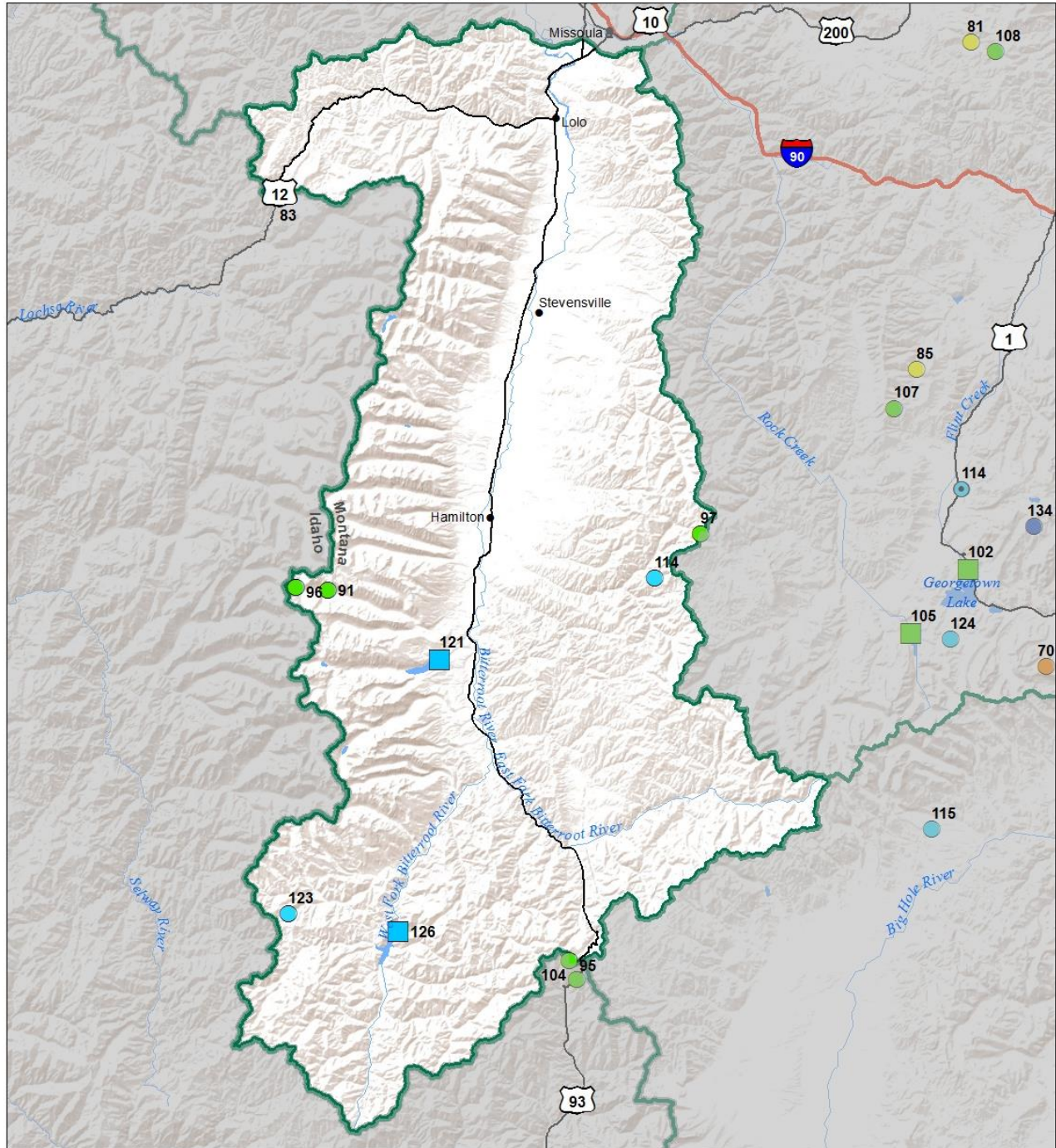
Water Year to Date Precipitation and Reservoir Levels

Percentage of Normal

May 1, 2017



Bitterroot River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)



Lower Clark Fork River Basin



Like the other Northwest river basins the Lower Clark Fork received abundant precipitation during the month of April. Monthly precipitation was 120 to 150% of average for the month, falling as rain at valley elevations and snow at higher elevations. It has been a wet winter in the mountains feeding the Lower Clark Fork with three months receiving over 10" of moisture (Oct, Feb & Mar). Sleeping Woman SNOTEL currently has the highest water year-to-date precipitation on record for May 1st, and is 161% of average. The Missoula Airport WSO gauge is reporting second highest water year precipitation totals for May 1st, and the other SNOTEL sites in the basin are also well above average. Snowpack in the basin is near to well above normal for May 1. Low elevation snowpack began melt in mid-March and has experienced gradual melt over the course of April. Most of the higher elevation snowpack continued to gain through April and remains to enter the rivers and streams this summer. Abundant precipitation and above normal snowpack on this date has resulted in streamflows forecasts that are above average for the May 1st – July 31st time period. So far, water supply is looking good for water users in the region.

Lower Clark For River Basin Data Summary

Snowpack	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
LOWER CLARK FORK RIVER BASIN	124%	67%
Basin-Wide	124%	67%

Precipitation	Monthly Percentage of Average	WYTD Percentage of 1981-2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	121%	134%	101%
Valley Precipitation	133%	148%	101%
Basin-Wide Precipitation	123%	136%	101%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

Reservoir Storage	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	107%	98%	105%

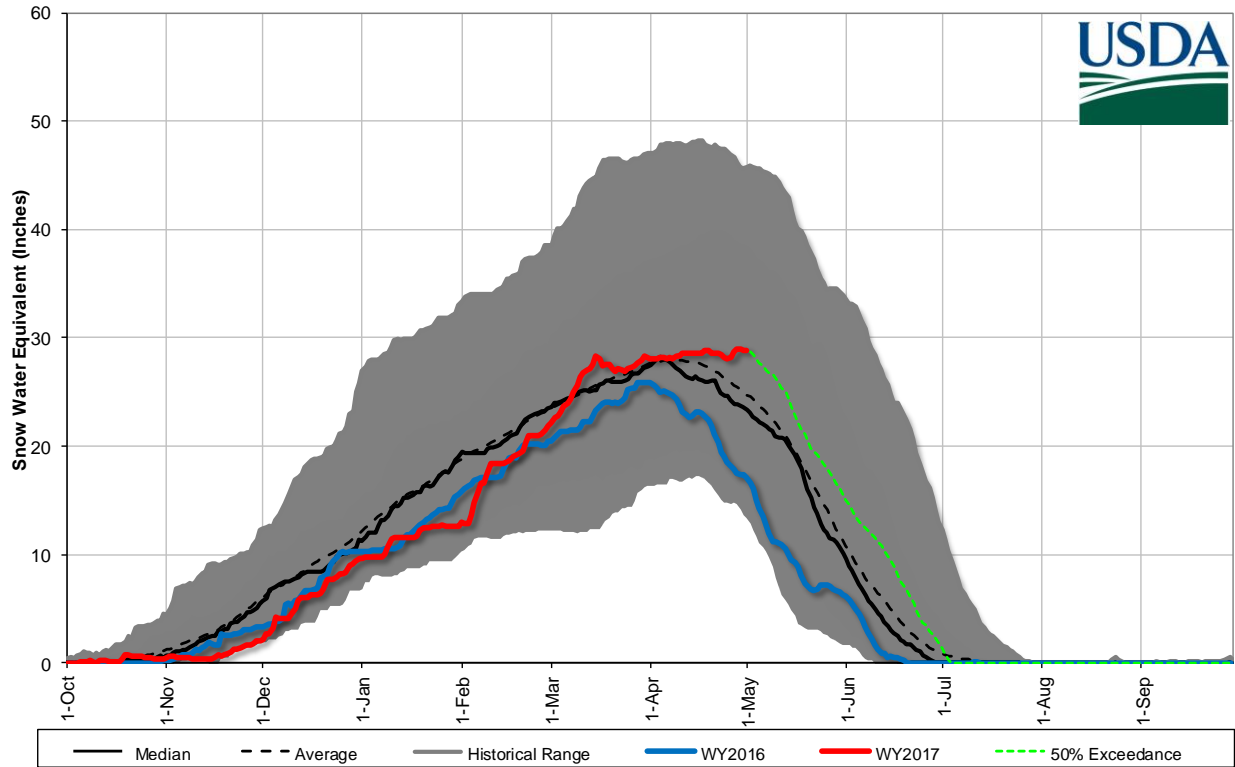
*See Reservoir Storage Table for storage in individual reservoirs

End of Month Storage

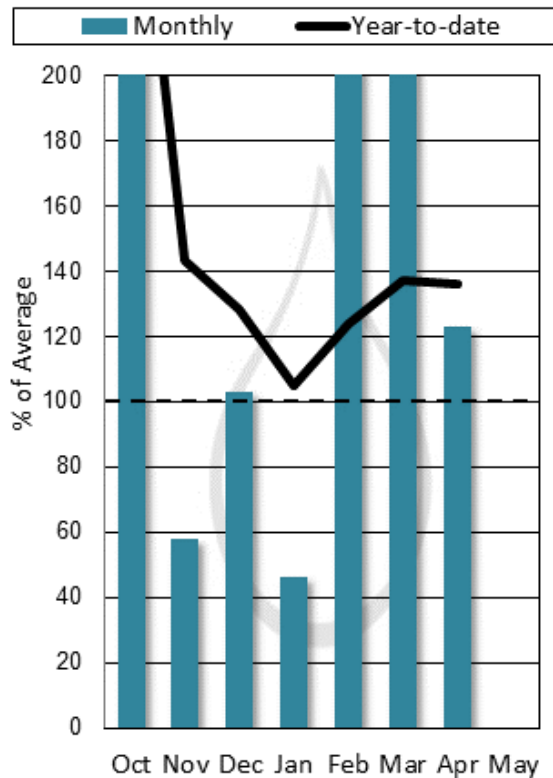
	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Noxon Rapids Reservoir	329.6	322.8	307.4	335	107%	98%

Lower Clark Fork River Basin Snowpack with Non-Exceedence Projections

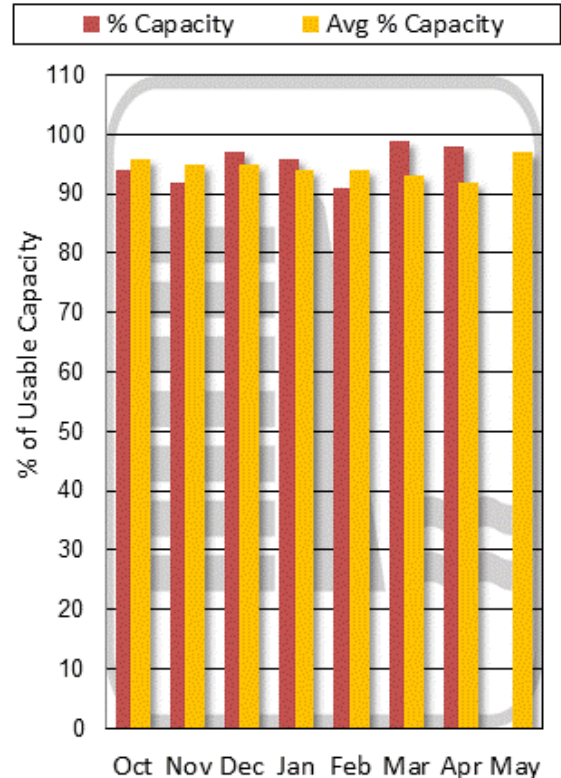
Based on provisional SNOTEL daily data as of 5/1/2017



Mountain and Valley Precipitation



End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

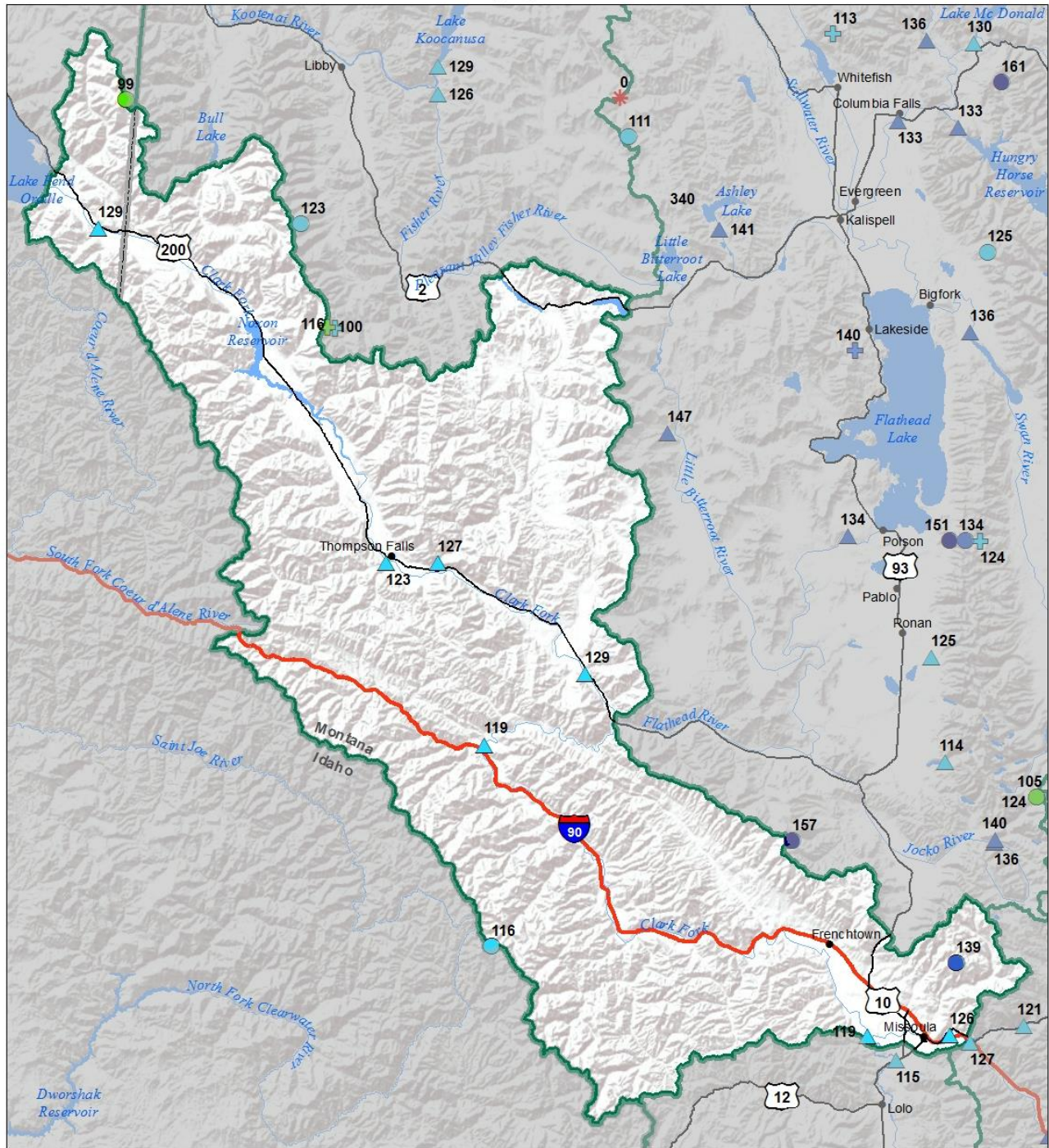
Lower Clark Fork River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Clark Fork R bl Missoula	MAY-JUL	1880	2210	2420	119%	2640	2970	2030
	MAY-SEP	2140	2490	2730	119%	2960	3320	2300
Clark Fork R at St. Regis ¹	MAY-JUL	2300	2890	3160	120%	3420	4010	2640
	MAY-SEP	2630	3270	3560	119%	3850	4490	2990
Clark Fork R nr Plains ^{1,2}	MAY-JUL	8390	9570	10100	130%	10600	11800	7780
	MAY-SEP	9220	10600	11200	129%	11800	13100	8650
Thompson nr Thompson Falls	MAY-JUL	130	158	178	129%	197	225	138
	MAY-SEP	153	184	205	127%	225	255	161
Prospect Ck at Thompson Falls	MAY-JUL	75	87	94	124%	102	114	76
	MAY-SEP	82	95	103	123%	111	123	84
Clark Fork R at Whitehorse Rapids ^{1,2}	MAY-JUL	9450	10700	11300	129%	11900	13100	8740
	MAY-SEP	10500	11900	12600	129%	13200	14600	9760

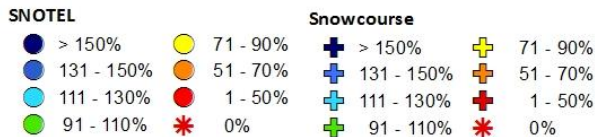
1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

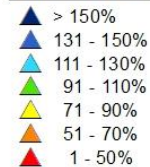
**Lower Clark Fork River Basin
Streamflow Forecast, Snow Water Equivalent
Percentage of Normal
May 1, 2017**



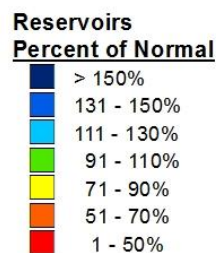
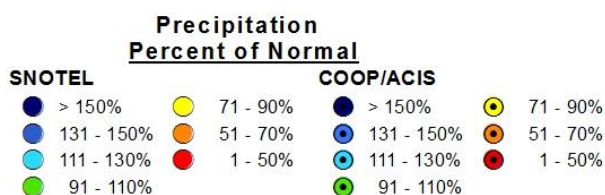
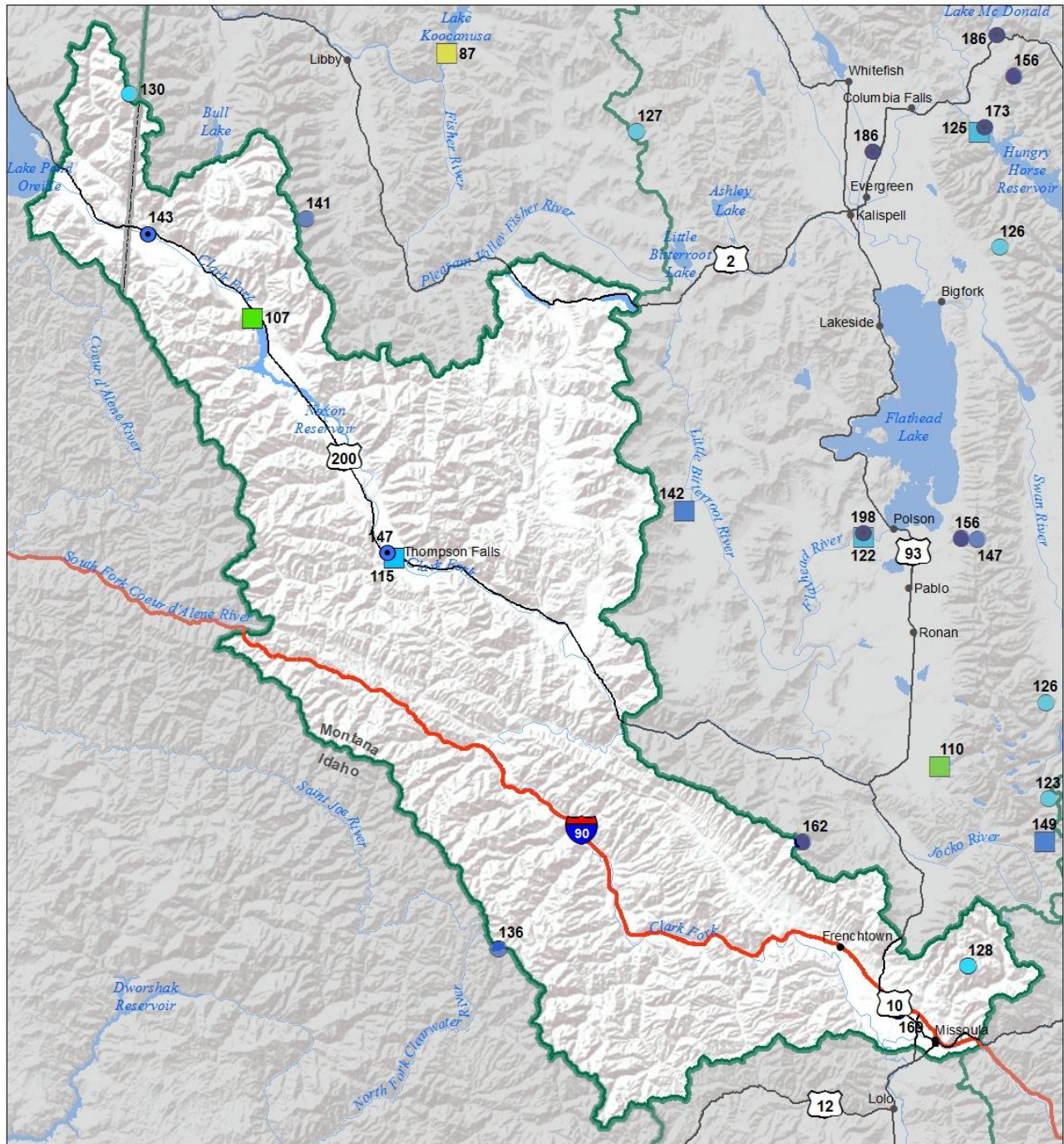
**Snow Water Equivalent
Percent of Normal**



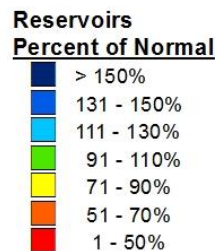
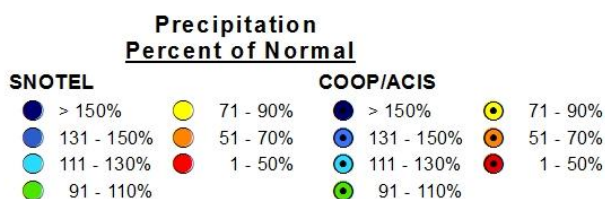
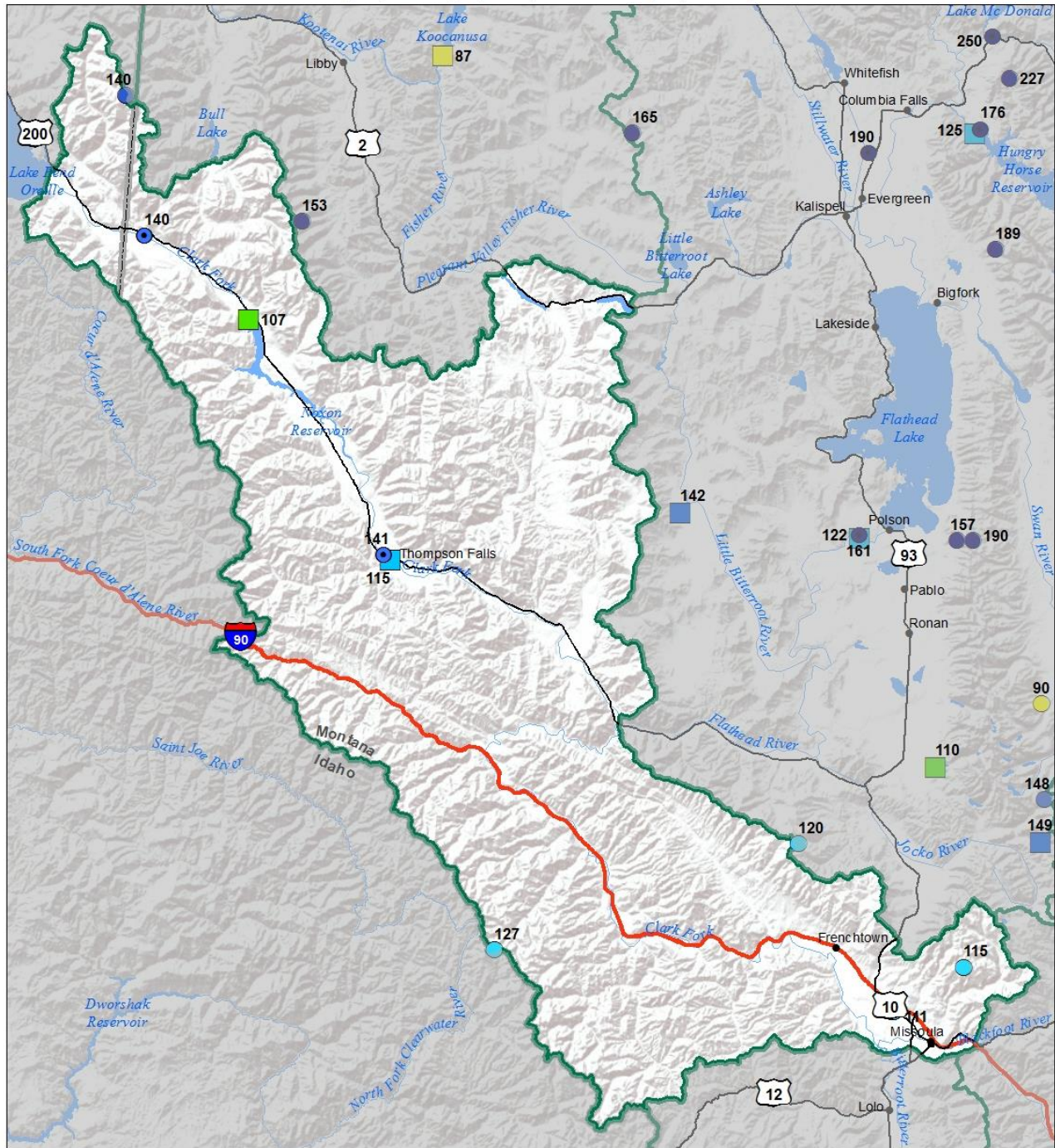
**Streamflow Forecast
Percent of Average Flows**



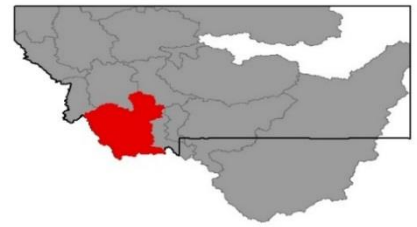
**Lower Clark Fork River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017**



Lower Clark Fork River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)



Jefferson River Basin



Snow totals for May 1 in the Jefferson River basin vary widely and have throughout this winter season. Healthy snowpack and above average water year precipitation in the Big Hole River basin looks to deliver above average streamflows this May 1 – July 31 time period. Along the southern border snowpack is more variable as mountain ranges tend to be lower in elevation. Snowpack in the Beaverhead River basin is above normal for this date at mid to high elevation sites, but lower sites in the basin began melting mid-March and continued melt through April. Snowpack in the Ruby River basin made a much needed recovery over the month and is now slightly above normal for this date, great news for Ruby water users. The Boulder River basin is the only region where snowpack is below normal for this date. The low-elevation ranges that feed the river experienced a lack of snowfall and precipitation over the last month, and warm temperatures caused melt of the existing snowpack. Streamflow forecasts for the basin vary widely due to the differences in snowpack across the basin, but for the most part are above average for the May 1st – July 31st time period.

Jefferson River Basin Data Summary

Snowpack	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
BEAVERHEAD	121%	85%
RUBY	110%	83%
BIGHOLE	118%	94%
BOULDER	91%	75%
Basin-Wide	113%	84%

Precipitation	Monthly Percentage of Average	WYTD Percentage of 1981-2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	119%	118%	99%
Valley Precipitation	126%	159%	124%
Basin-Wide Precipitation	120%	119%	100%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

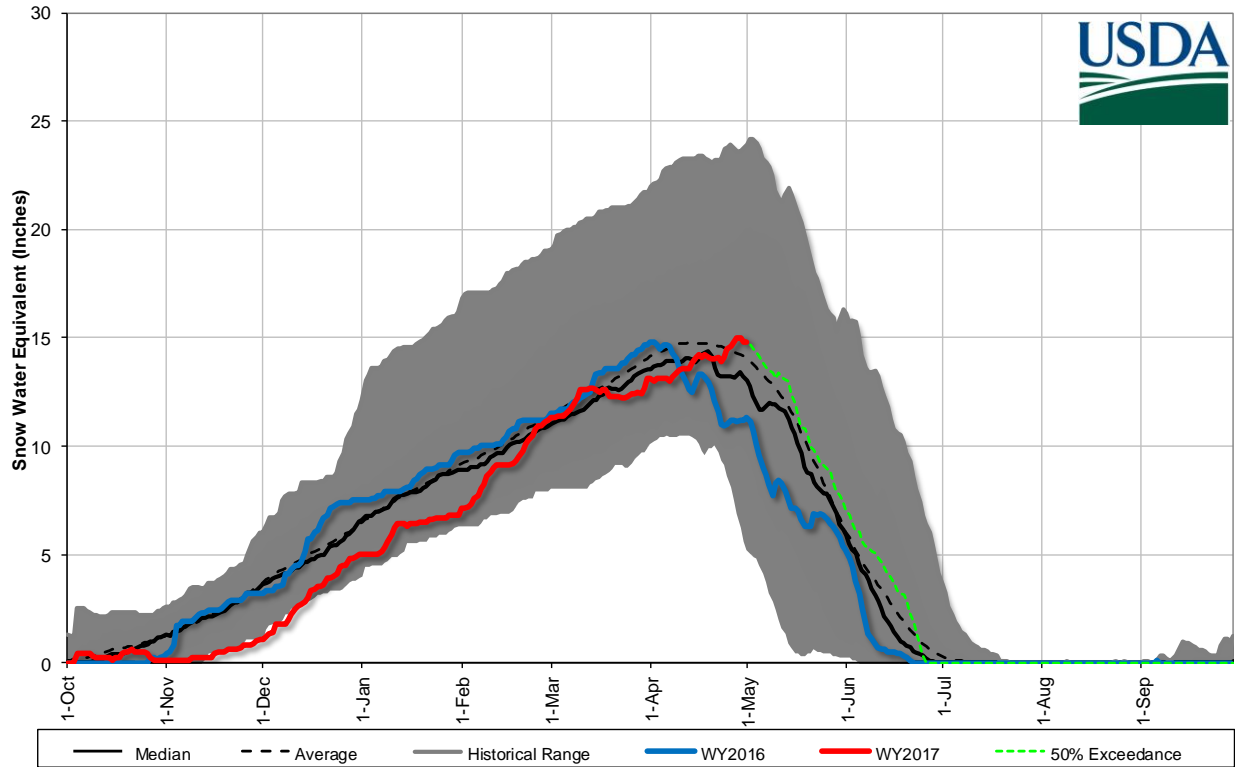
Reservoir Storage	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	108%	66%	95%

*See Reservoir Storage Table for storage in individual reservoirs

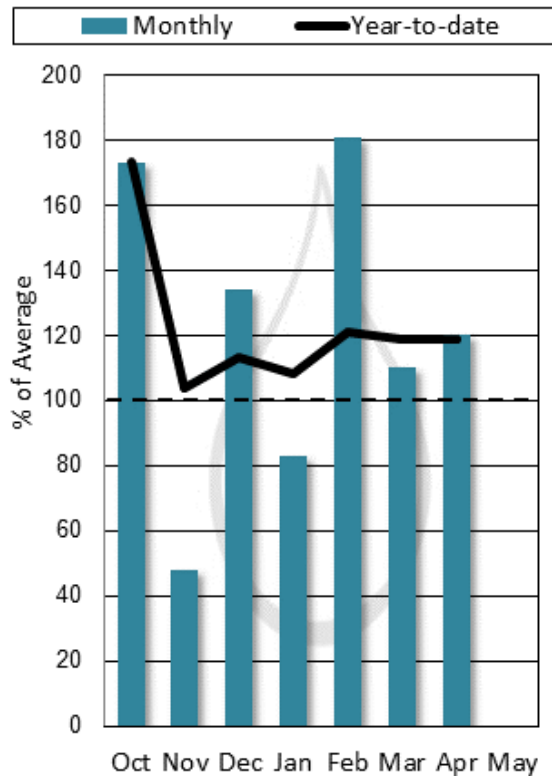
End of Month Storage

	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Lima Reservoir	75.1	60.2	54.4	84.0	138%	89%
Clark Canyon Res	137.8	123.5	141.6	255.6	97%	54%
Ruby River Reservoir	38.0	38.5	36.7	38.8	104%	98%

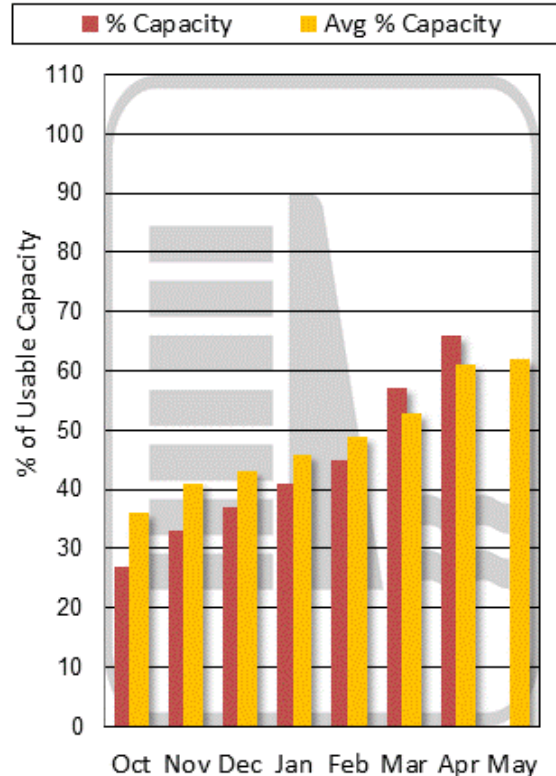
Jefferson River Basin Snowpack with Non-Exceedence Projections
Based on provisional SNOTEL daily data as of 5/1/2017



**Mountain and Valley
Precipitation**



**End of Month Reservoir
Storage**



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

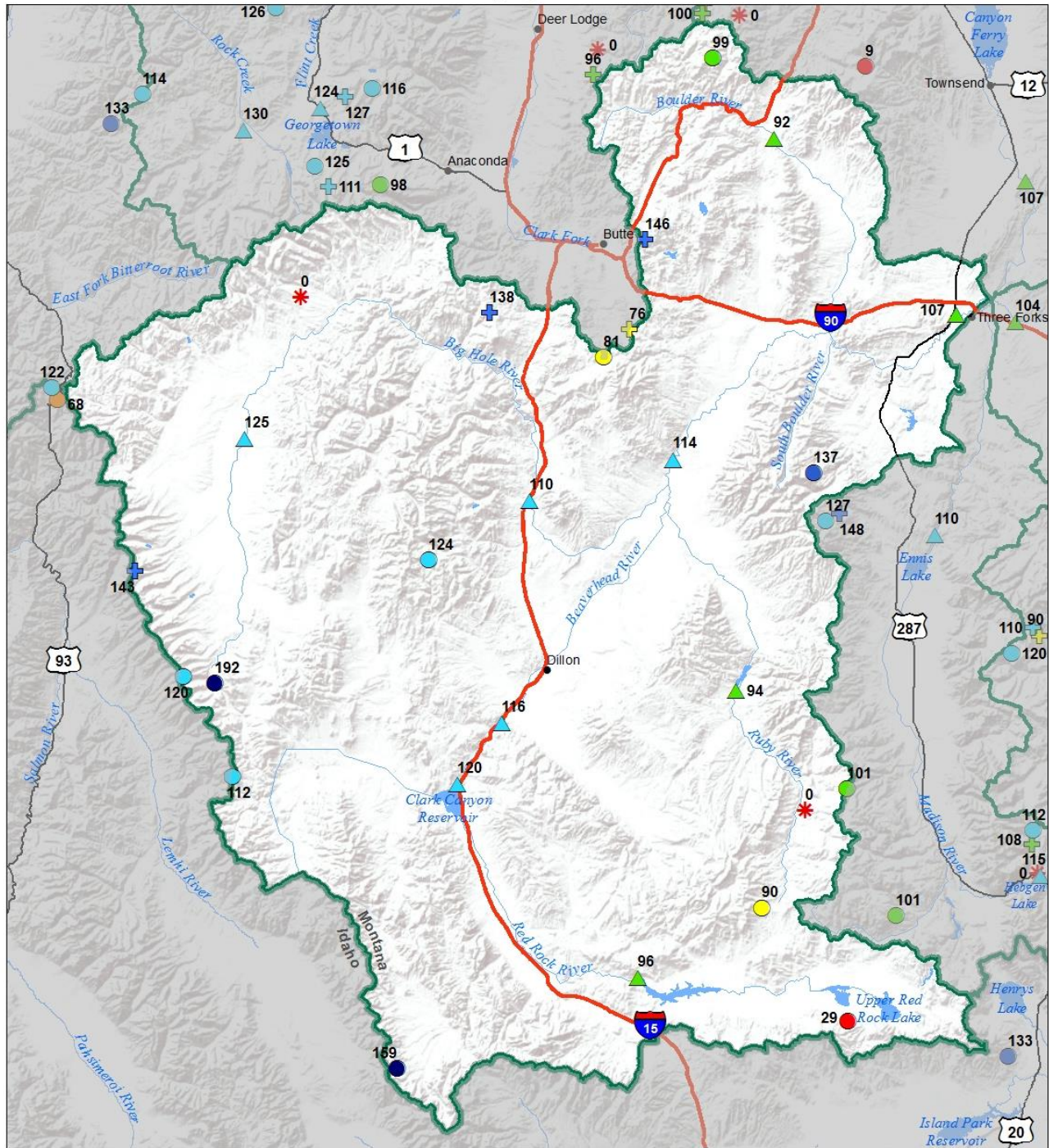
Jefferson River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Lima Reservoir Inflow ²	MAY-JUL	25	39	48	96%	57	71	50
	MAY-SEP	28	44	54	96%	64	80	56
Clark Canyon Inflow ²	MAY-JUL	31	58	76	119%	94	121	64
	MAY-SEP	45	78	100	120%	122	155	83
Beaverhead R at Barretts ²	MAY-JUL	49	79	100	118%	120	151	85
	MAY-SEP	70	105	129	116%	153	188	111
Ruby R Reservoir Inflow ²	MAY-JUL	42	54	63	94%	72	84	67
	MAY-SEP	52	67	77	94%	87	102	82
Big Hole R at Wisdom	MAY-JUL	39	72	94	125%	116	149	75
	MAY-SEP	41	76	100	125%	124	159	80
Big Hole R nr Melrose	MAY-JUL	345	425	485	110%	540	620	440
	MAY-SEP	375	465	530	110%	590	680	480
Jefferson R nr Twin Bridges ²	MAY-JUL	310	470	580	113%	685	850	515
	MAY-SEP	340	515	630	114%	750	925	555
Boulder R nr Boulder	MAY-JUL	27	44	55	92%	66	83	60
	MAY-SEP	29	47	60	92%	73	91	65
Willow Ck Reservoir Inflow ²	MAY-JUL	8.1	13.5	17.2	119%	21	26	14.4
Jefferson R nr Three Forks ²	MAY-JUL	350	510	620	108%	730	890	575
	MAY-SEP	365	550	680	107%	810	995	635

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Jefferson River Basin Streamflow Forecast, Snow Water Equivalent Percentage of Normal May 1, 2017



Snow Water Equivalent Percent of Normal

SNOTEL

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

Snowcourse

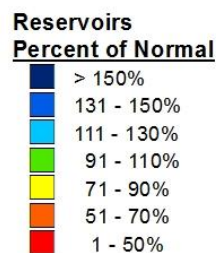
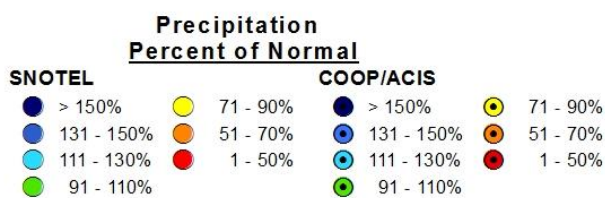
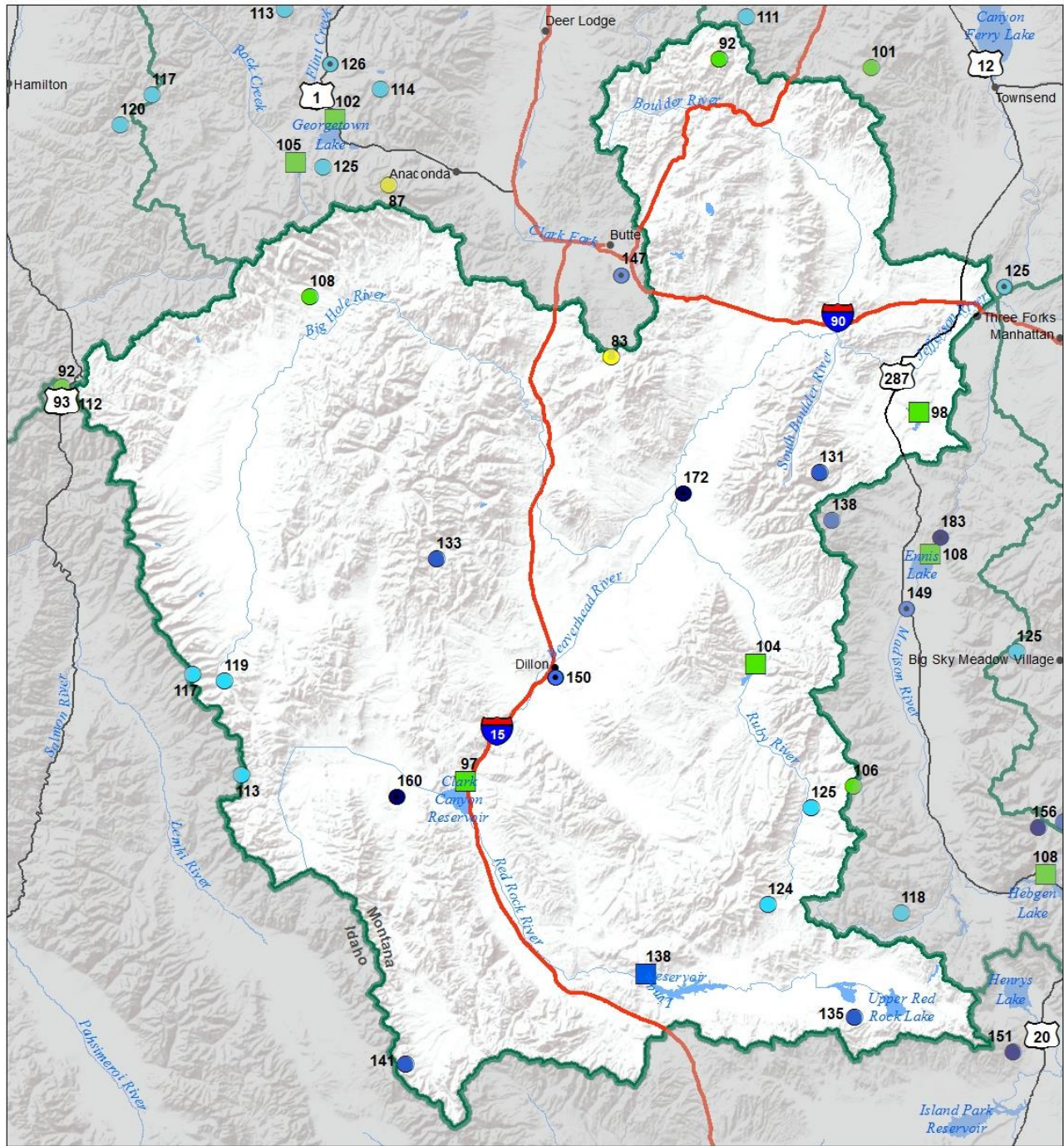
- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

Streamflow Forecast Percent of Average Flows

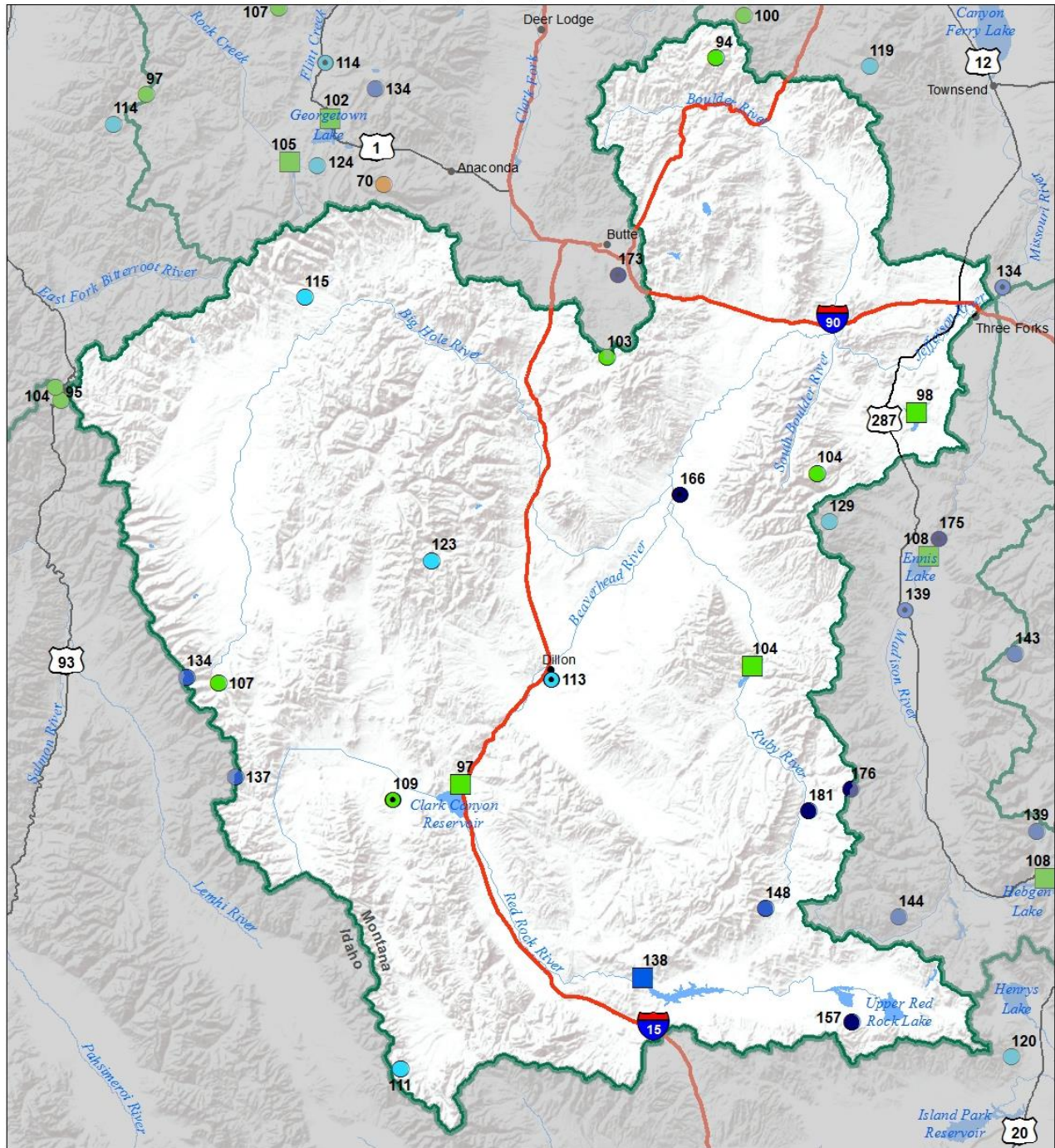
- ▲ > 150%
- ▲ 131 - 150%
- ▲ 111 - 130%
- ▲ 91 - 110%
- ▲ 71 - 90%
- ▲ 51 - 70%
- ▲ 1 - 50%



Jefferson River Basin Water Year to Date Precipitation and Reservoir Levels Percentage of Normal May 1, 2017



Jefferson River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)

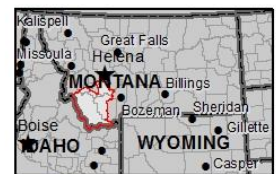


**Precipitation
Percent of Normal**

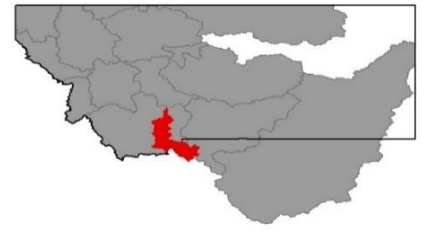
SNOTEL		COOP/ACIS	
● > 150%	● 71 - 90%	● > 150%	● 71 - 90%
● 131 - 150%	● 51 - 70%	● 131 - 150%	● 51 - 70%
● 111 - 130%	● 1 - 50%	● 111 - 130%	● 1 - 50%
● 91 - 110%		● 91 - 110%	

**Reservoirs
Percent of Normal**

■ > 150%
■ 131 - 150%
■ 111 - 130%
■ 91 - 110%
■ 71 - 90%
■ 51 - 70%
■ 1 - 50%



Madison River Basin



Only two months failed to bring well above average precipitation (Nov, Jan) to the mountains feeding the Madison River basin this winter, April again delivered abundant precipitation to the basin. Snowpack in the upper reaches of the river above Hebgen Lake has been well above normal throughout this year, and remains in good standing on May 1st. Some regions below Hebgen Lake have been below normal for snowpack, but made substantial improvements during the month of April. Clover Meadow SNOTEL, located high in the Gravelly Range, was second lowest on record for snowpack totals on April 1st, but now stands at 101% on May 1st, the site typically peaks around May 1st. Lower in the basin in the Madison and Tobacco Root ranges snow totals have been in good shape through the year and continue to hold strong on May 1. Well above average water year precipitation and above normal snowpack totals for this date has resulted in streamflow forecasts that are above average for the May 1st – July 31st time period. This is great news for water users and anglers who should enjoy a good irrigation and fishing season on the Madison.

Madison River Basin Data Summary

Snowpack

	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
MADISON abv HEBGEN LAKE	125%	74%
MADISON blw HEBGEN LAKE	116%	83%
Basin-Wide	119%	80%

Precipitation

	Monthly Percentage of Average	WYTD Percentage of 1981- 2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	141%	137%	96%
Valley Precipitation	154%	178%	100%
Basin-Wide Precipitation	142%	141%	96%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

Reservoir Storage

	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	108%	79%	110%

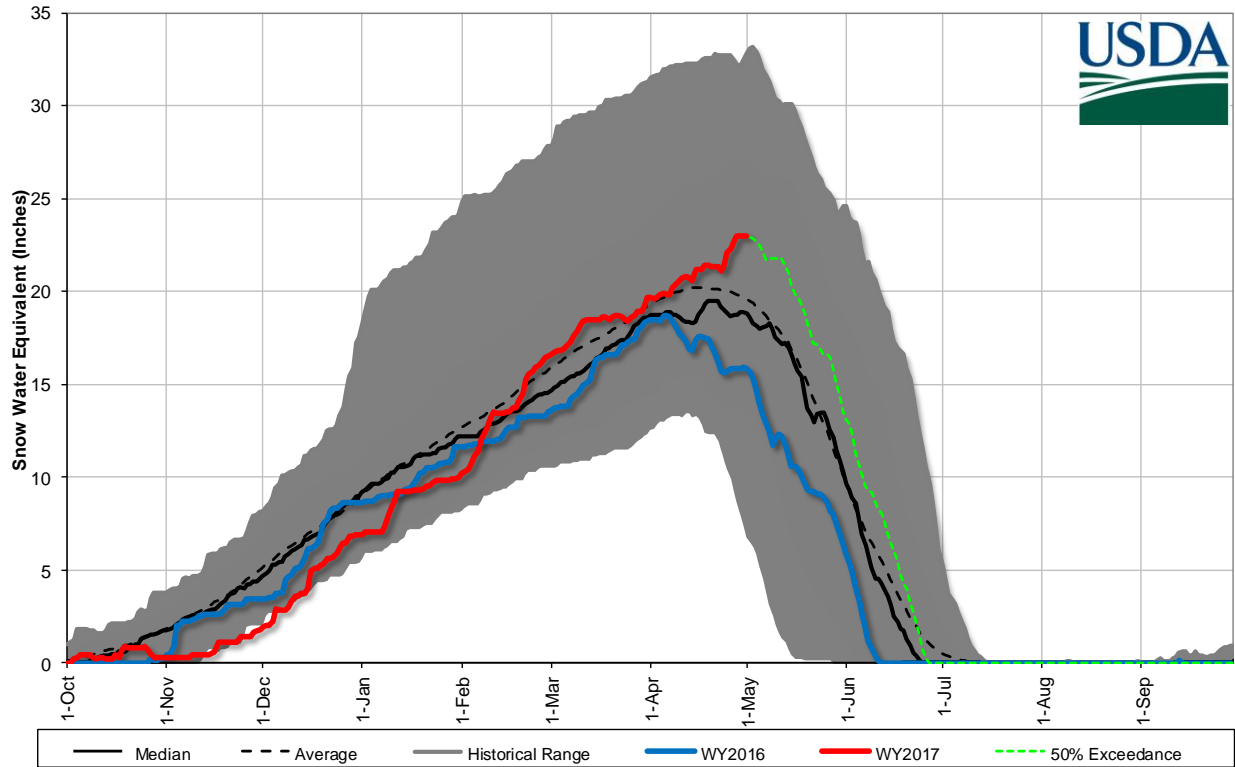
*See Reservoir Storage Table for storage in individual reservoirs

End of Month Storage

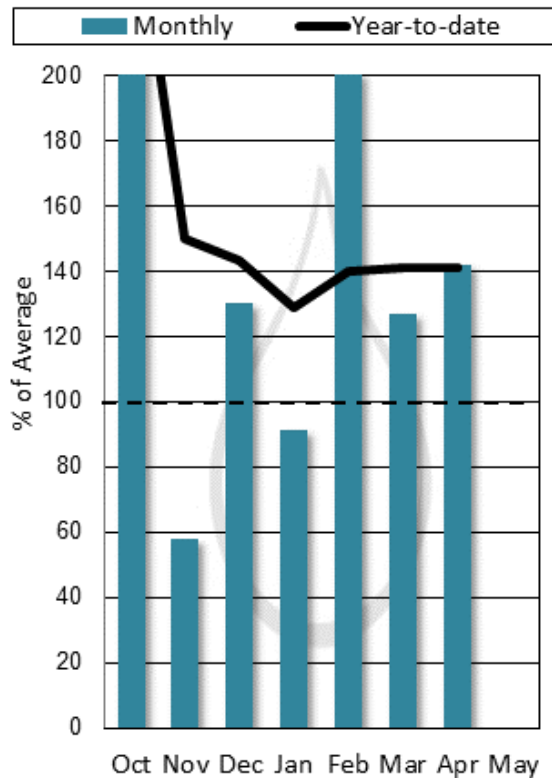
	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Ennis Lake	35.1	35.1	32.4	41.0	108%	86%
Hebgen Lake	298.2	303.7	276.7	378.8	108%	79%

Madison River Basin Snowpack with Non-Exceedence Projections

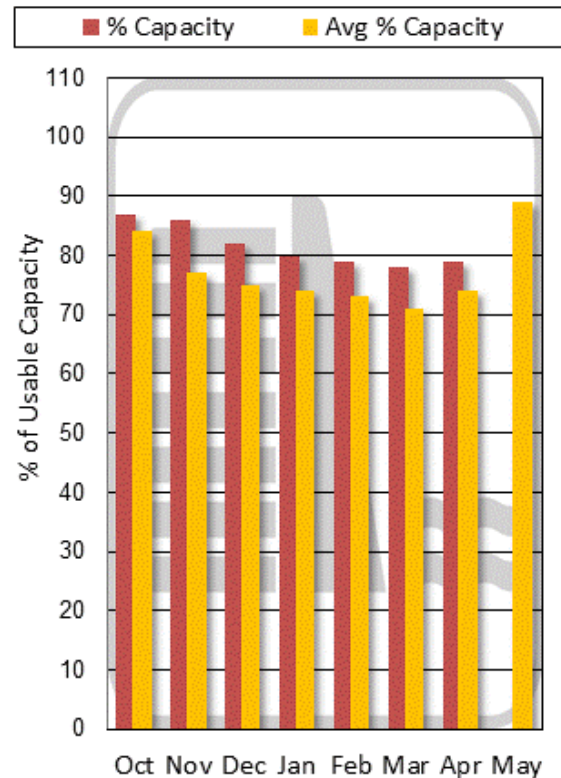
Based on provisional SNOTEL daily data as of 5/1/2017



Mountain and Valley Precipitation



End of Month Reservoir Storage



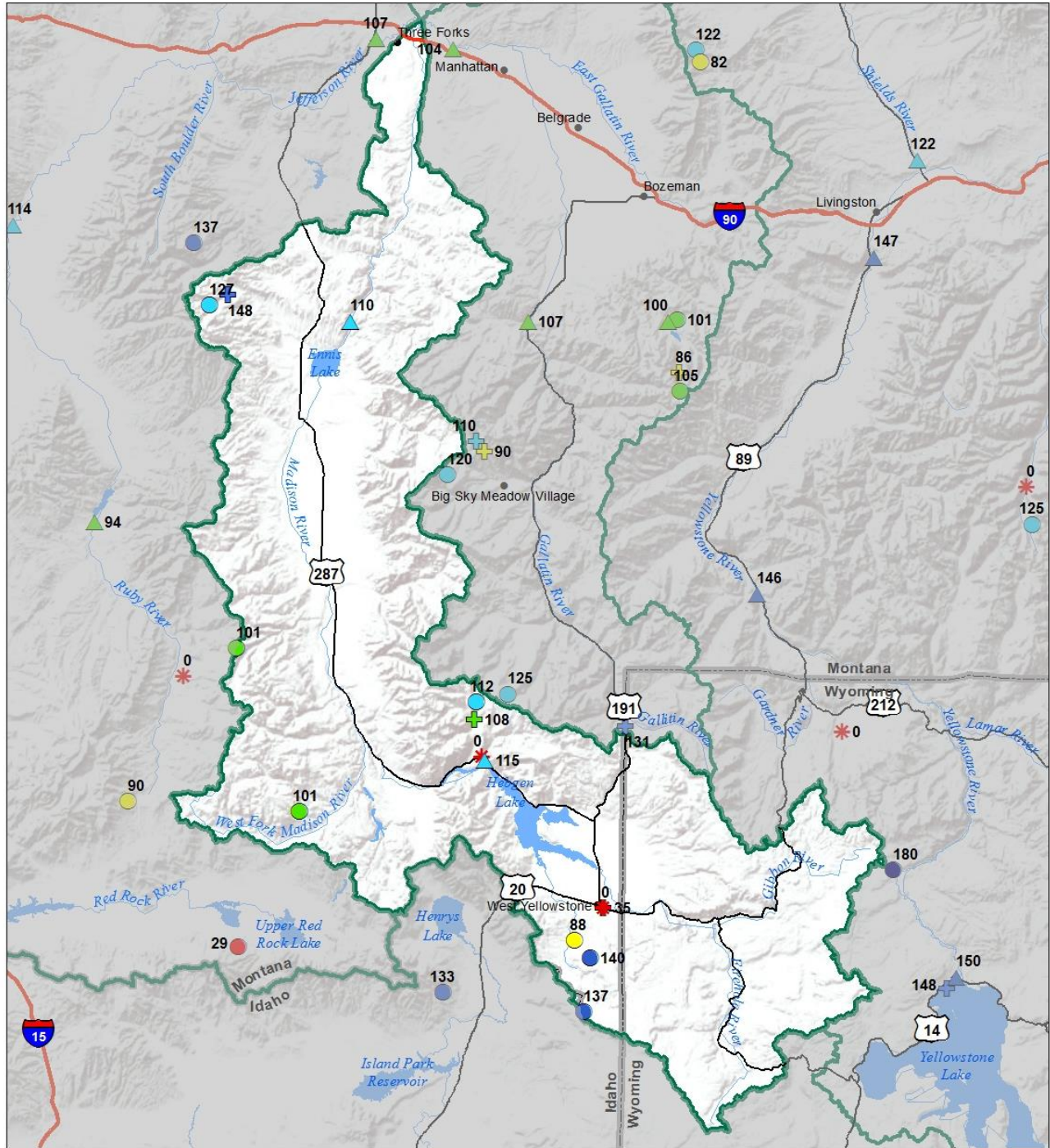
Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Madison River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Hebgen Reservoir Inflow ²	MAY-JUL	290	330	355	116%	380	420	305
	MAY-SEP	380	430	465	115%	500	550	405
Ennis Reservoir Inflow ²	MAY-JUL	480	545	590	111%	635	700	530
	MAY-SEP	610	695	750	110%	805	890	680

1) 90% and 10% exceedance probabilities are actually 95% and 5%

Madison River Basin Streamflow Forecast, Snow Water Equivalent Percentage of Normal May 1, 2017



Snow Water Equivalent Percent of Normal

SNOTEL

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

Snowcourse

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

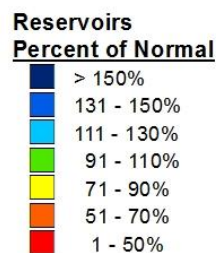
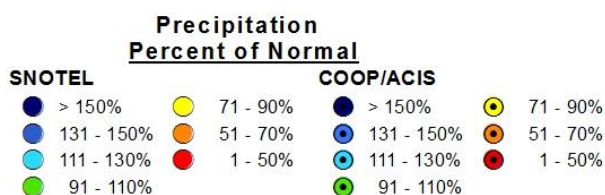
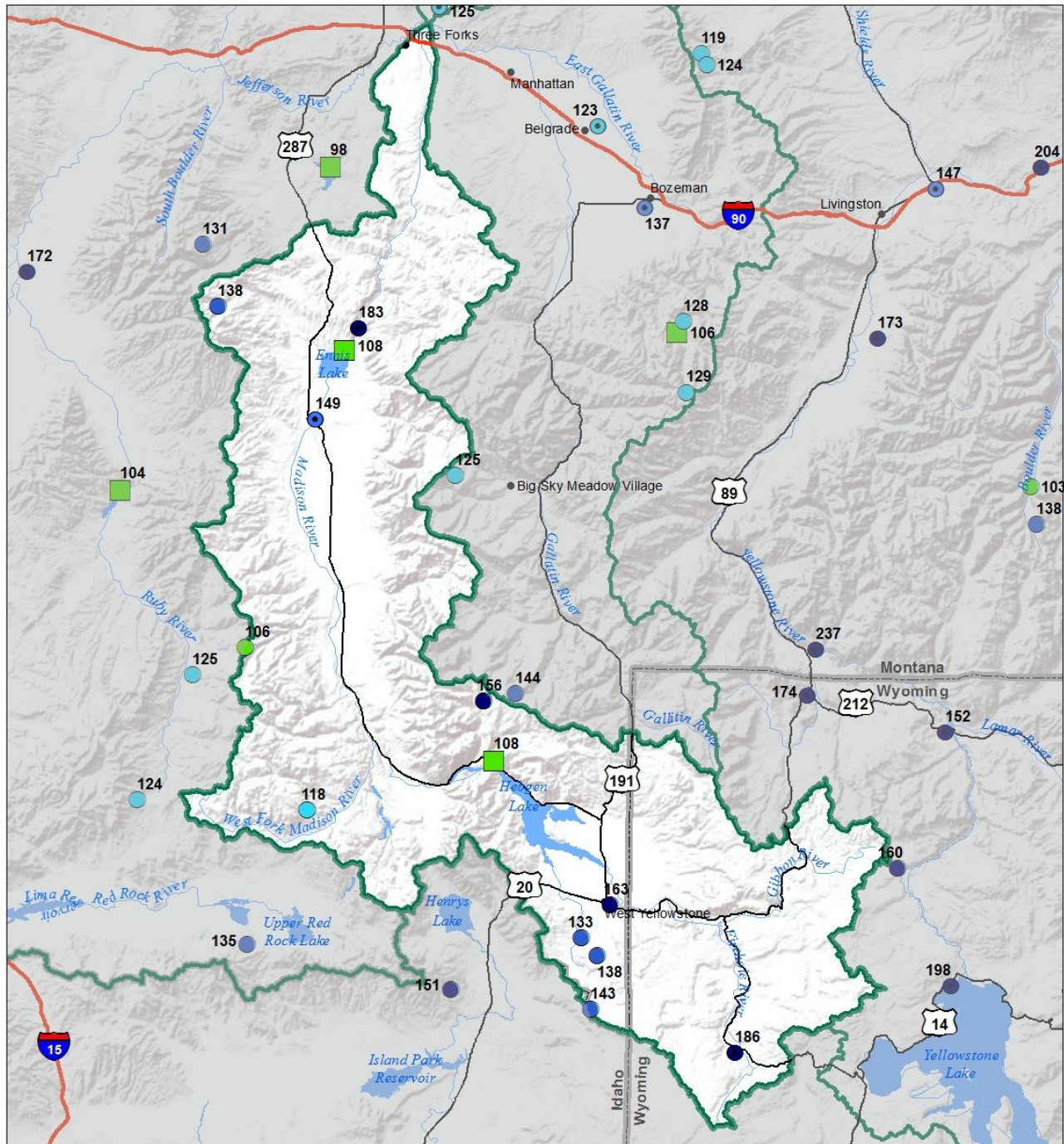
- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

Streamflow Forecast Percent of Average Flows

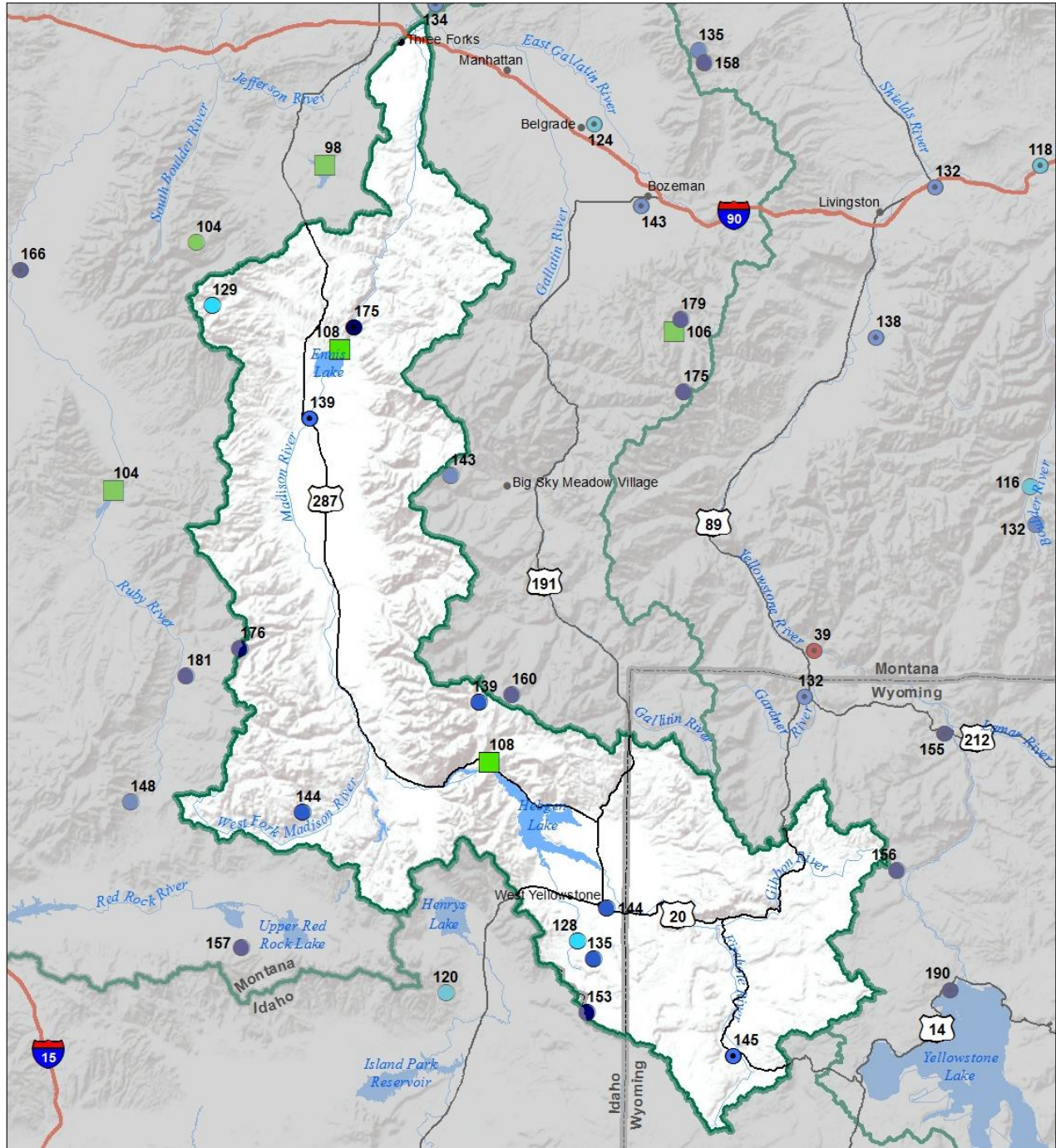
- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%



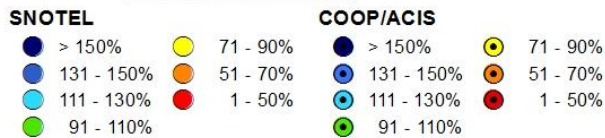
Madison River Basin Water Year to Date Precipitation and Reservoir Levels Percentage of Normal May 1, 2017



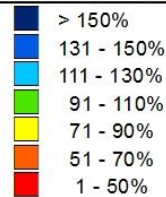
Madison River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)



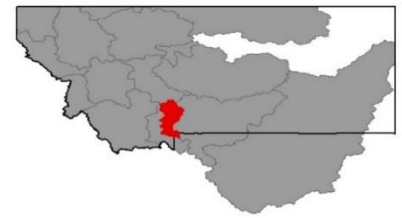
Precipitation
Percent of Normal



Reservoirs
Percent of Normal



Gallatin River Basin



What a difference a month can make. On April 1st it was reported that the snowpack feeding Middle Creek Reservoir (Hyalite) was the lowest, or second lowest in 50+ years of record. This April brought consistent and substantial snowfall to the area, and the snowpack is now back to normal for May 1st. The high elevation Shower Falls SNOTEL site received 8.9" of snow water over the month, or about 30% of this year's annual total in one month. This is great news for all of those who rely on Hyalite for water supply. The Upper Gallatin has been favored throughout the winter with regards to storms and April continued to deliver snow to the high elevation ranges to the south of Bozeman. Snowpack in the Upper Gallatin above Gateway, MT is above normal for May 1st. Although March began the melt at low to mid-elevations the return to cool and wet weather slowed, or stopped, the melt at many snowpack measurement locations, and most sites saw net gains in snow water over the month. Above average precipitation this water year, and increased snowpack totals on May 1st has resulted in streamflow forecasts that are up from April 1st, with near to slightly above average flows forecasted for the May 1st – July 31st time period. Irrigators, Fly Anglers and Boaters rejoice!

Gallatin River Basin Data Summary

Snowpack

	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
UPPER GALLATIN	114%	90%
HYALITE	99%	91%
BRIDGER	108%	78%
Basin-Wide	110%	89%

Precipitation

	Monthly Percentage of Average	WYTD Percentage of 1981- 2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	156%	132%	104%
Valley Precipitation	135%	132%	108%
Basin-Wide Precipitation	154%	132%	104%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

Reservoir Storage

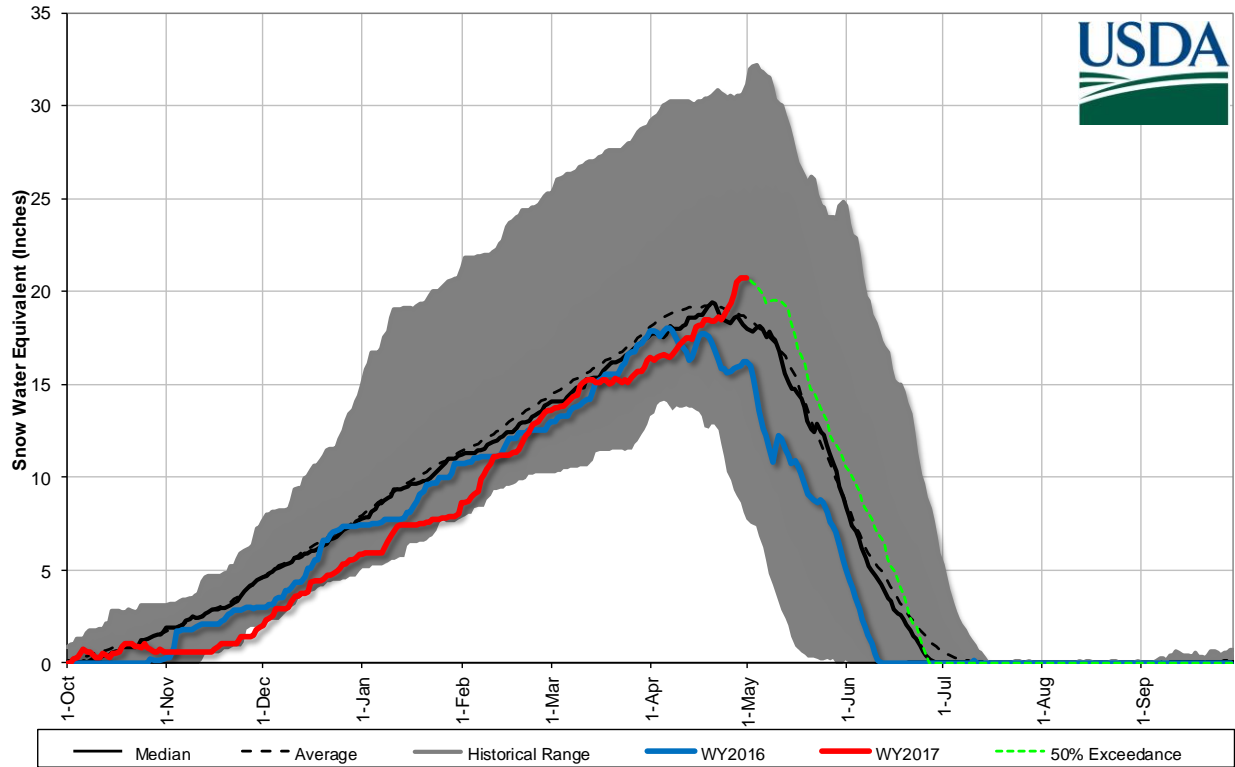
	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	106%	64%	148%

*See Reservoir Storage Table for storage in individual reservoirs

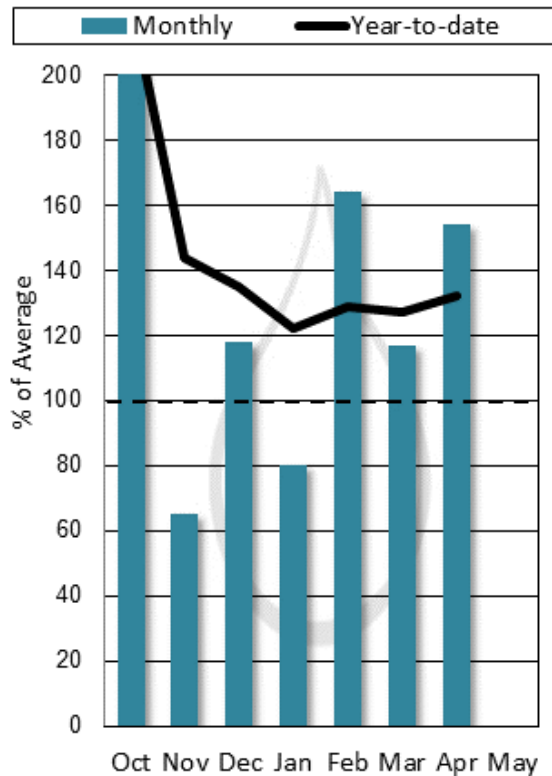
End of Month Storage

	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Middle Creek Res	6.6	9.2	6.2	10.2	106%	64%

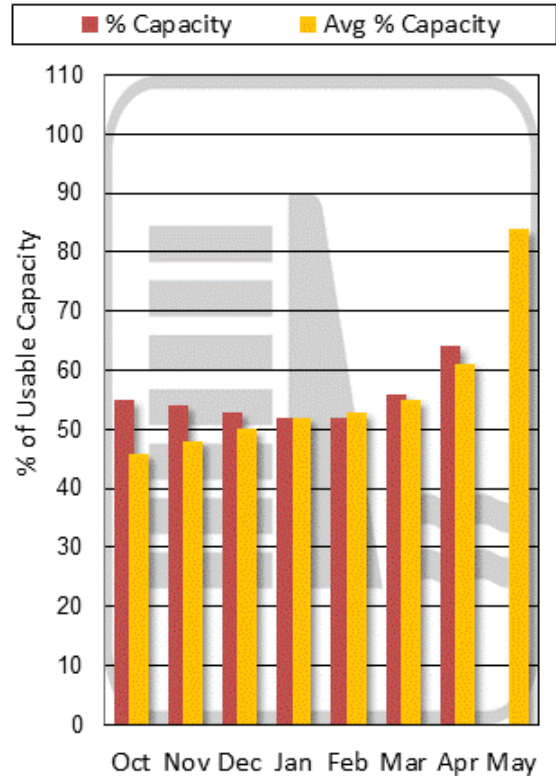
Gallatin River Basin Snowpack with Non-Exceedence Projections
Based on provisional SNOTEL daily data as of 5/1/2017



**Mountain and Valley
Precipitation**



**End of Month Reservoir
Storage**



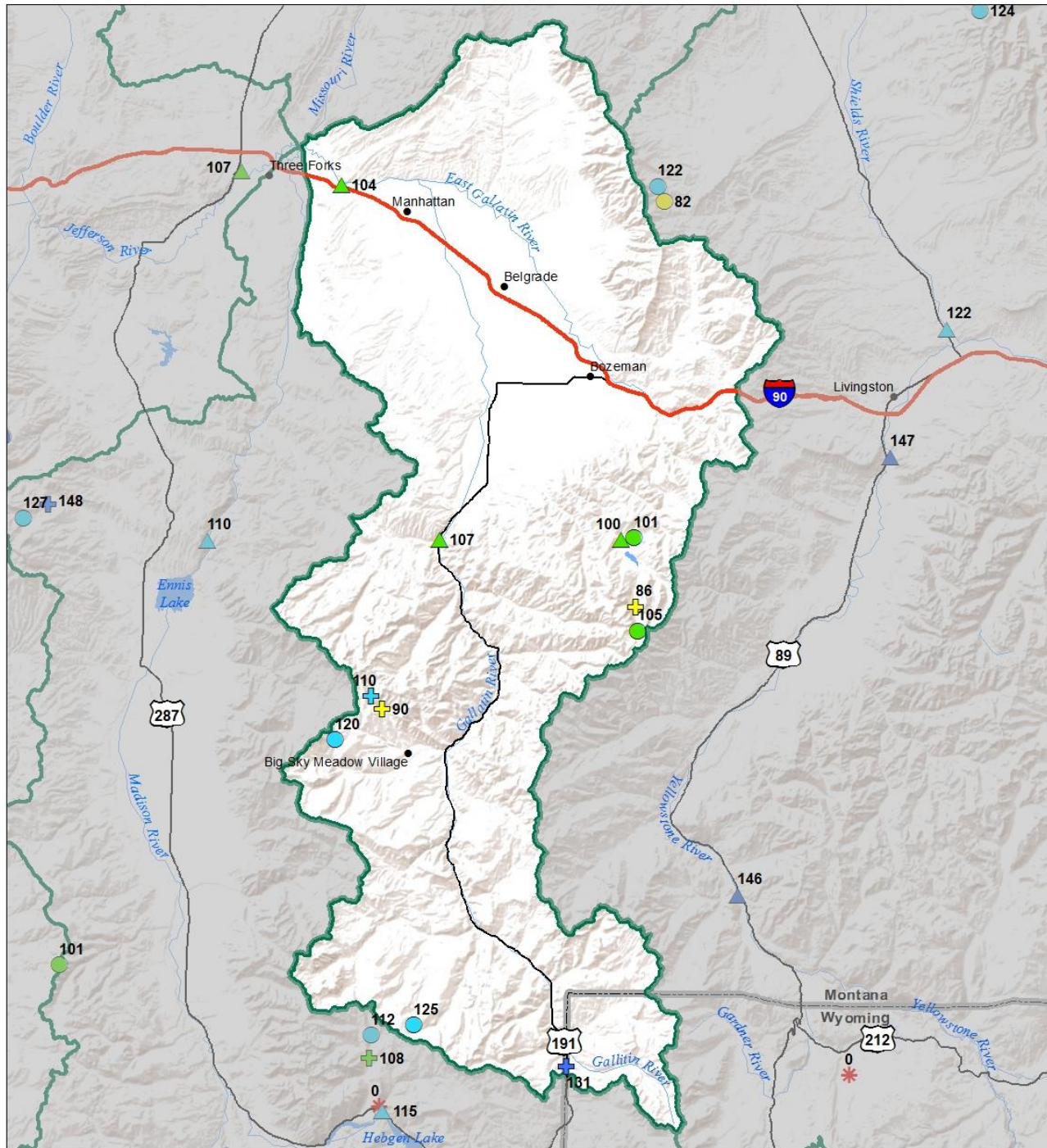
Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Gallatin River Basin

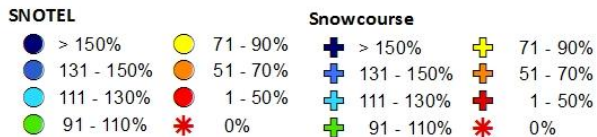
		Chance Actual Volume Will Exceed Forecasted Volume						
GALLATIN RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Gallatin R nr Gateway	MAY-JUL	335	375	400	108%	425	465	370
	MAY-SEP	395	440	470	107%	500	545	440
Hyalite Reservoir Inflow ²	MAY-JUL	15.6	17.4	18.6	101%	19.8	22	18.5
	MAY-SEP	18.1	20	21	100%	23	25	21
Gallatin R at Logan	MAY-JUL	275	345	400	105%	450	525	380
	MAY-SEP	315	405	465	104%	525	615	445

1) 90% and 10% exceedance probabilities are actually 95% and 5%

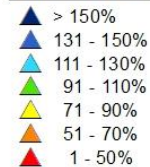
**Gallatin River Basin
Streamflow Forecast, Snow Water Equivalent
Percentage of Normal
May 1, 2017**



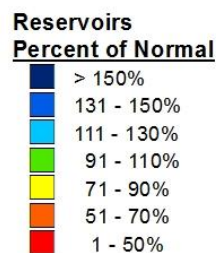
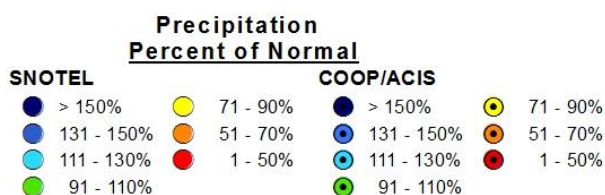
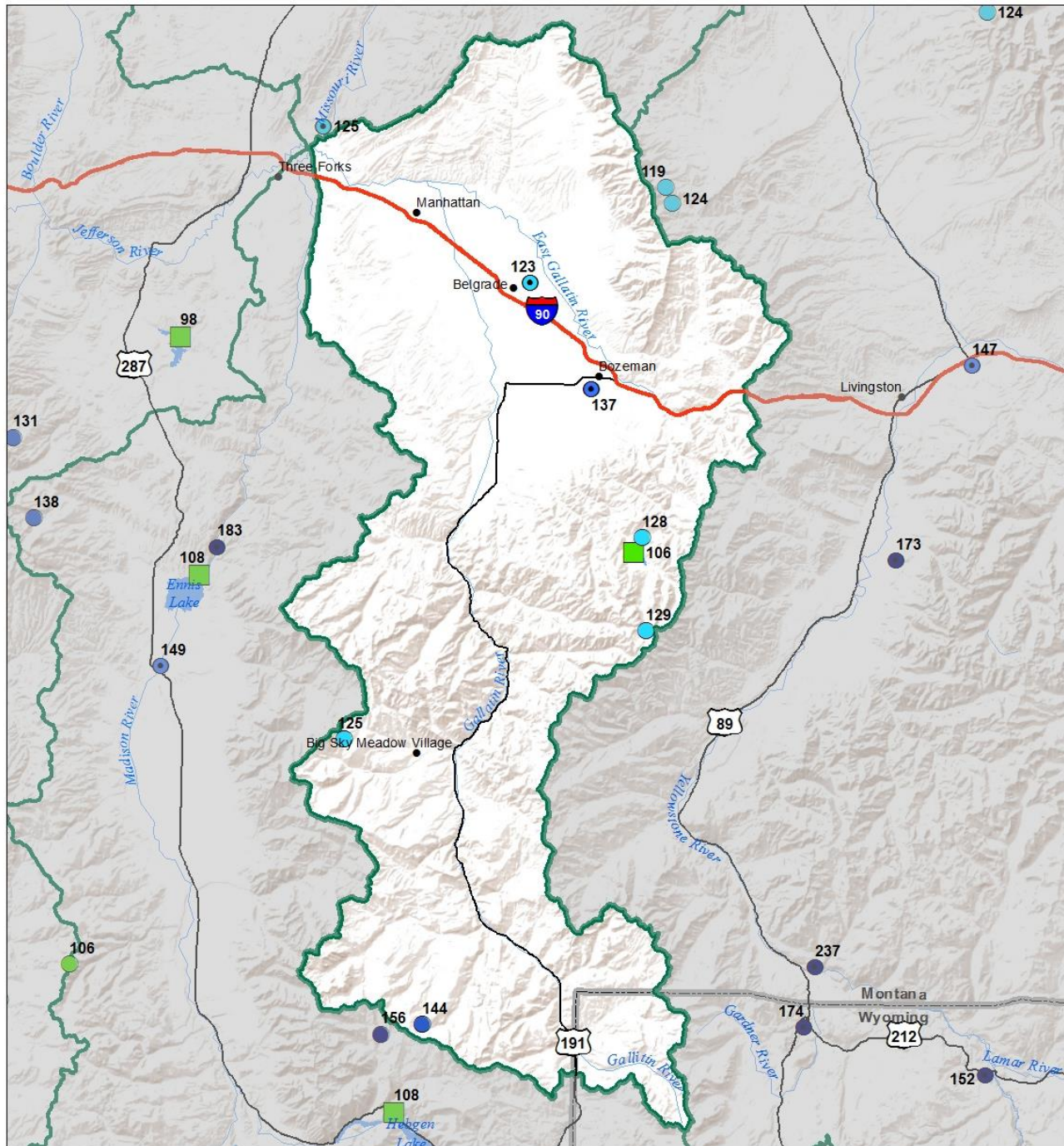
**Snow Water Equivalent
Percent of Normal**



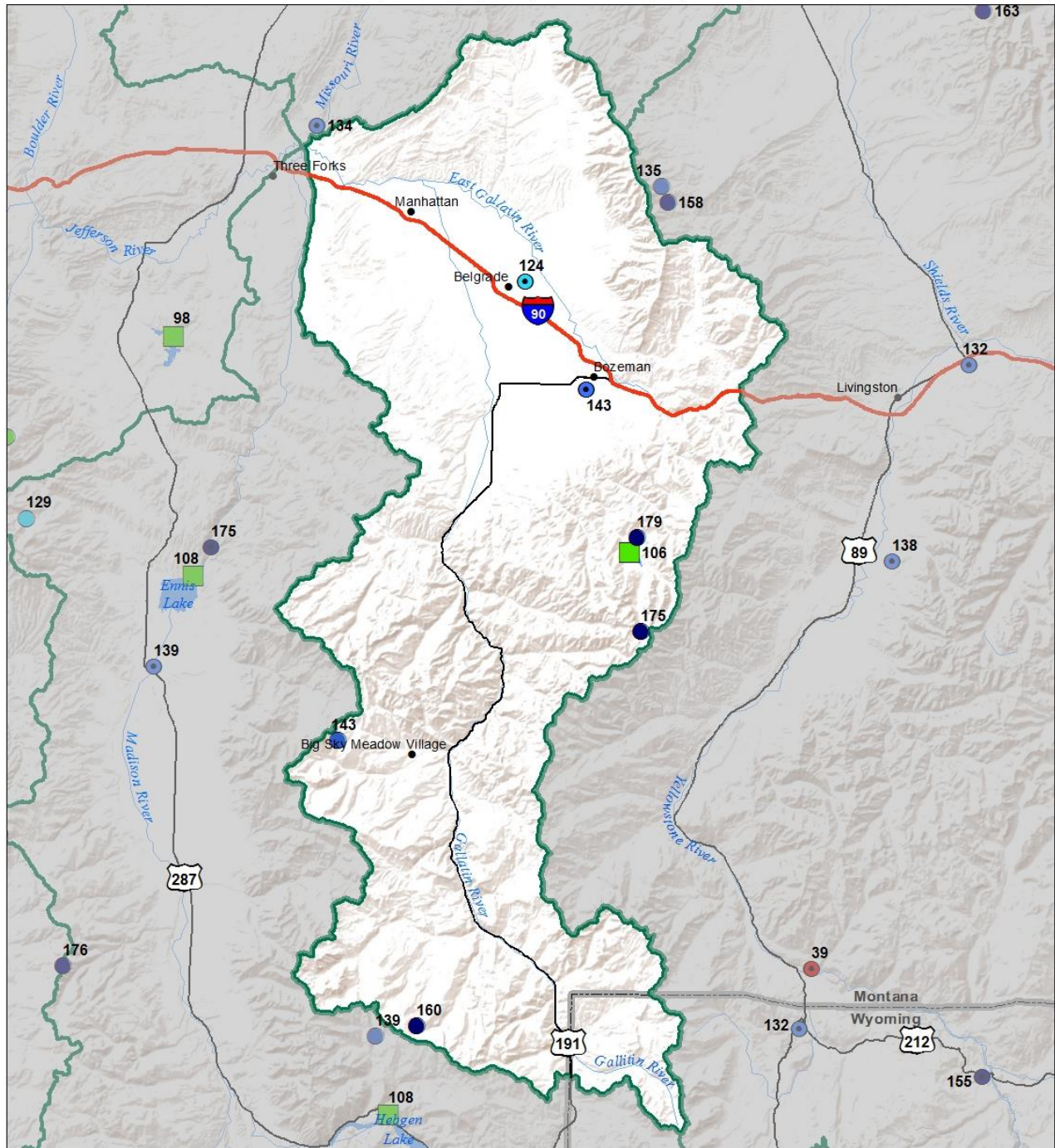
**Streamflow Forecast
Percent of Average Flows**



Gallatin River Basin Water Year to Date Precipitation and Reservoir Levels Percentage of Normal May 1, 2017



Gallatin River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)



Precipitation
Percent of Normal

SNOTEL

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

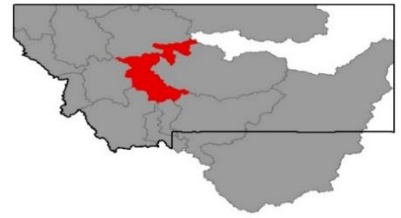
COOP/ACIS

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%





Headwaters Mainstem (Missouri) River Basin

Precipitation was near average during April in the Headwater Mainstem River basin. Daily maximum temperatures were well above freezing at low elevation SNOTEL sites during the month and most of the precipitation arrived as rain at those elevations. This resulted in significant melt of the low elevation snowpack within the basin. The basin wide snowpack appeared to have peaked during mid-March, however a storm during the second week of April added to the high elevation snow and it peaked a second time. Much of the basin's low elevation snow is melted out or near to melting out. Frohner Meadow SNOTEL (6480 ft) melted out on April 29th and the snow at Tizer Basin SNOTEL will be gone by the end of the first week in May. Overall, water year-to-date precipitation in the Headwaters Mainstem River basin is near average.

Headwaters Missouri Mainstem River Basin Data Summary

Snowpack	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
HEADWATERS MAINSTEM	90%	69%
SMITH-JUDITH-MUSSELSHELL	83%	88%
SUN-TETON-MARIAS	129%	34%
MAINSTEM ab FT PECK RES	100%	64%
MILK RIVER BASIN	0%	0%
Basin-Wide	100%	64%

Precipitation	Monthly Percentage of Average	WYTD Percentage of 1981-2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	99%	109%	100%
Valley Precipitation	73%	143%	89%
Basin-Wide Precipitation	97%	110%	100%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

Reservoir Storage	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	118%	83%	114%

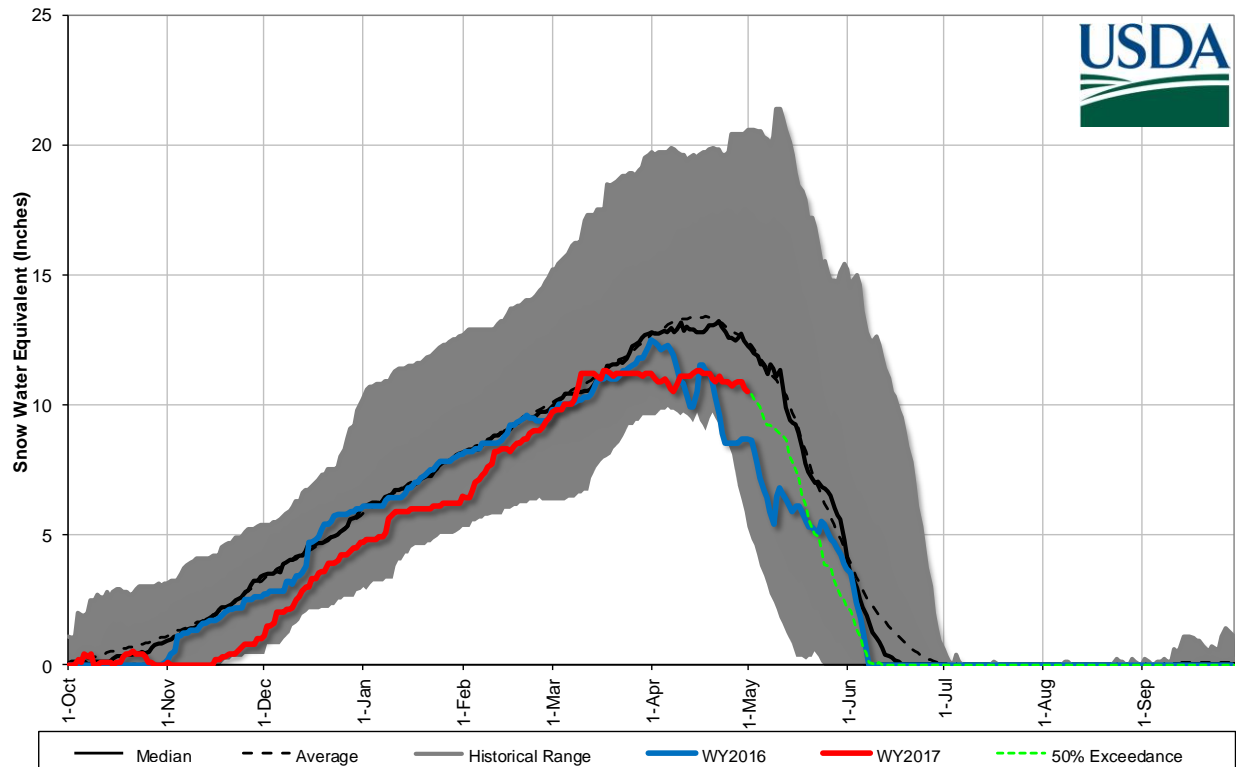
*See Reservoir Storage Table for storage in individual reservoirs

End of Month Storage

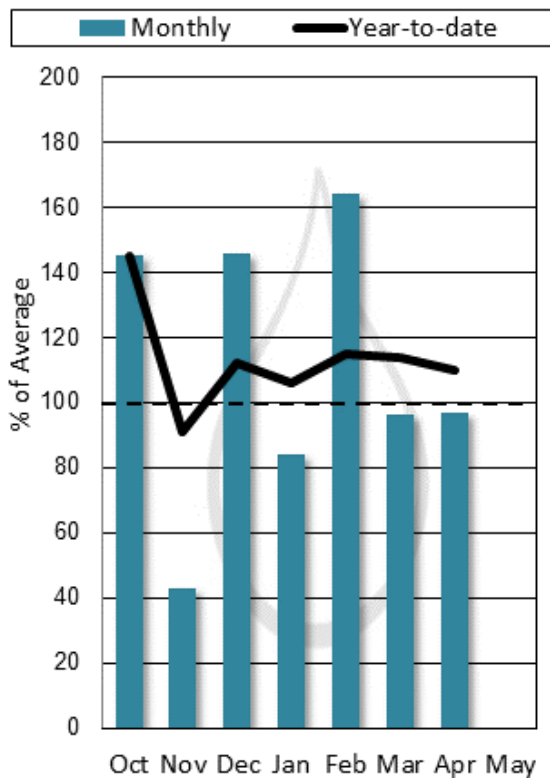
	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Canyon Ferry Lake	1566.4	1581.1	1480.0	2043.0	106%	77%
Helena Valley Reservoir	8.9	8.6	8.2	9.2	108%	97%
Lake Helena	11.0	11.0	10.8	12.7	101%	86%
Hauser Lake & Lake Helena	74.1	74.2	74.2	74.6	100%	99%
Holter Lake	81.2	80.8	80.6	81.9	101%	99%
Fort Peck Lake	15694.2	15040.4	13138.0	18910.0	119%	83%

Missouri River Basin below Toston above Smith River Inflow Snowpack with Non-Exceedence Projections

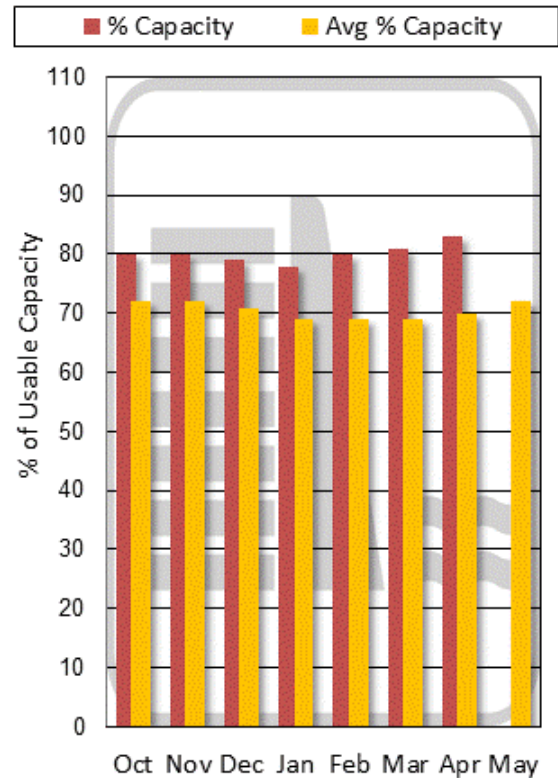
Based on provisional SNOTEL daily data as of 5/1/2017



Mountain and Valley Precipitation



End of Month Reservoir Storage



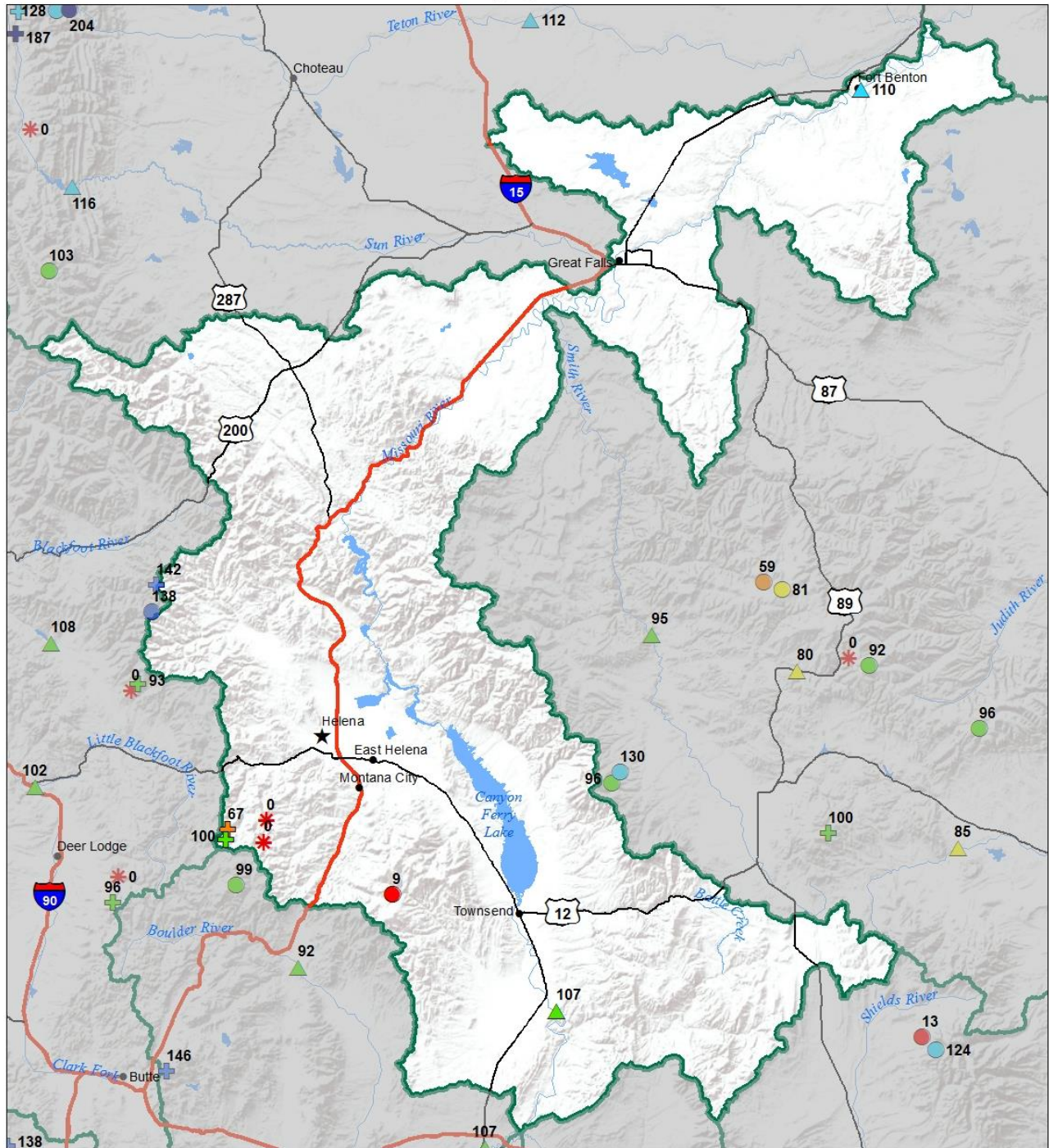
Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Missouri Mainstem Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Missouri R at Toston ²	MAY-JUL	1160	1420	1600	108%	1780	2040	1480
	MAY-SEP	1330	1660	1890	107%	2110	2450	1760
Dearborn R nr Craig								
Missouri R at Fort Benton ²	MAY-JUL	1700	2130	2420	111%	2710	3140	2190
	MAY-SEP	2060	2590	2950	110%	3310	3840	2680
Missouri R nr Virgelle ²	MAY-JUL	2010	2470	2790	111%	3100	3560	2510
	MAY-SEP	2360	2940	3330	110%	3720	4300	3030
Missouri R nr Landusky ²	MAY-JUL	2140	2640	2990	113%	3330	3840	2650
	MAY-SEP	2520	3140	3570	112%	3990	4620	3200
Missouri R bl Fort Peck Dam ²	MAY-JUL	2000	2580	2970	110%	3370	3940	2700
	MAY-SEP	2140	2890	3410	108%	3920	4680	3160
Lake Sakakawea Inflow ²								

1) 90% and 10% exceedance probabilities are actually 95% and 5%

Headwaters Mainstem (Missouri) River Basin Streamflow Forecast, Snow Water Equivalent Percentage of Normal May 1, 2017



Snow Water Equivalent Percent of Normal

SNOTEL

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

Snowcourse

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

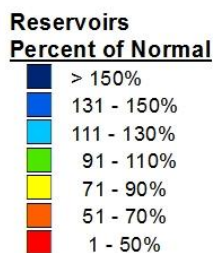
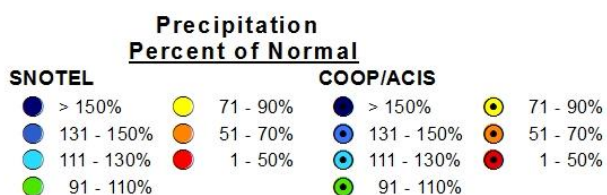
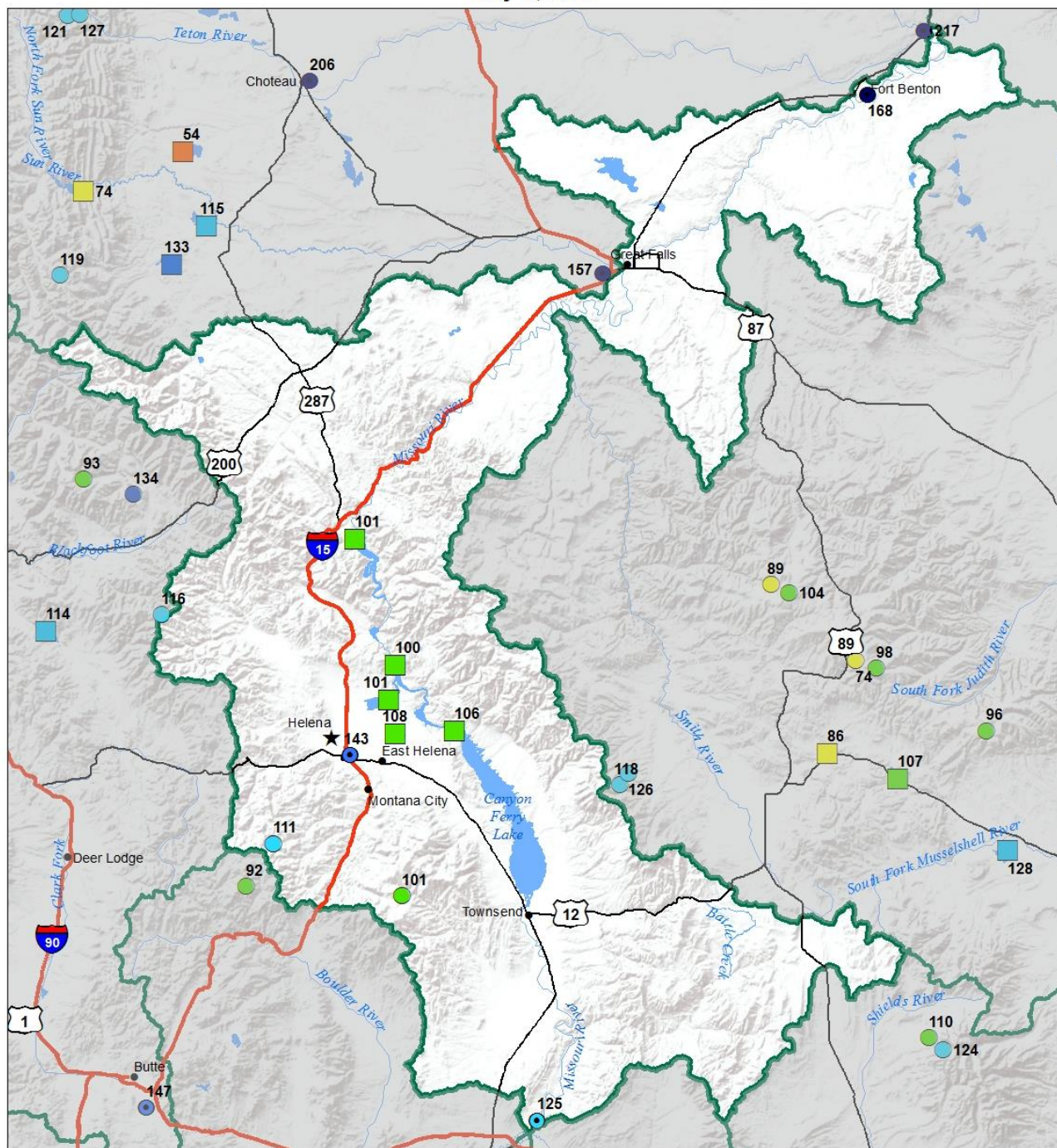
- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

Streamflow Forecast Percent of Average Flows

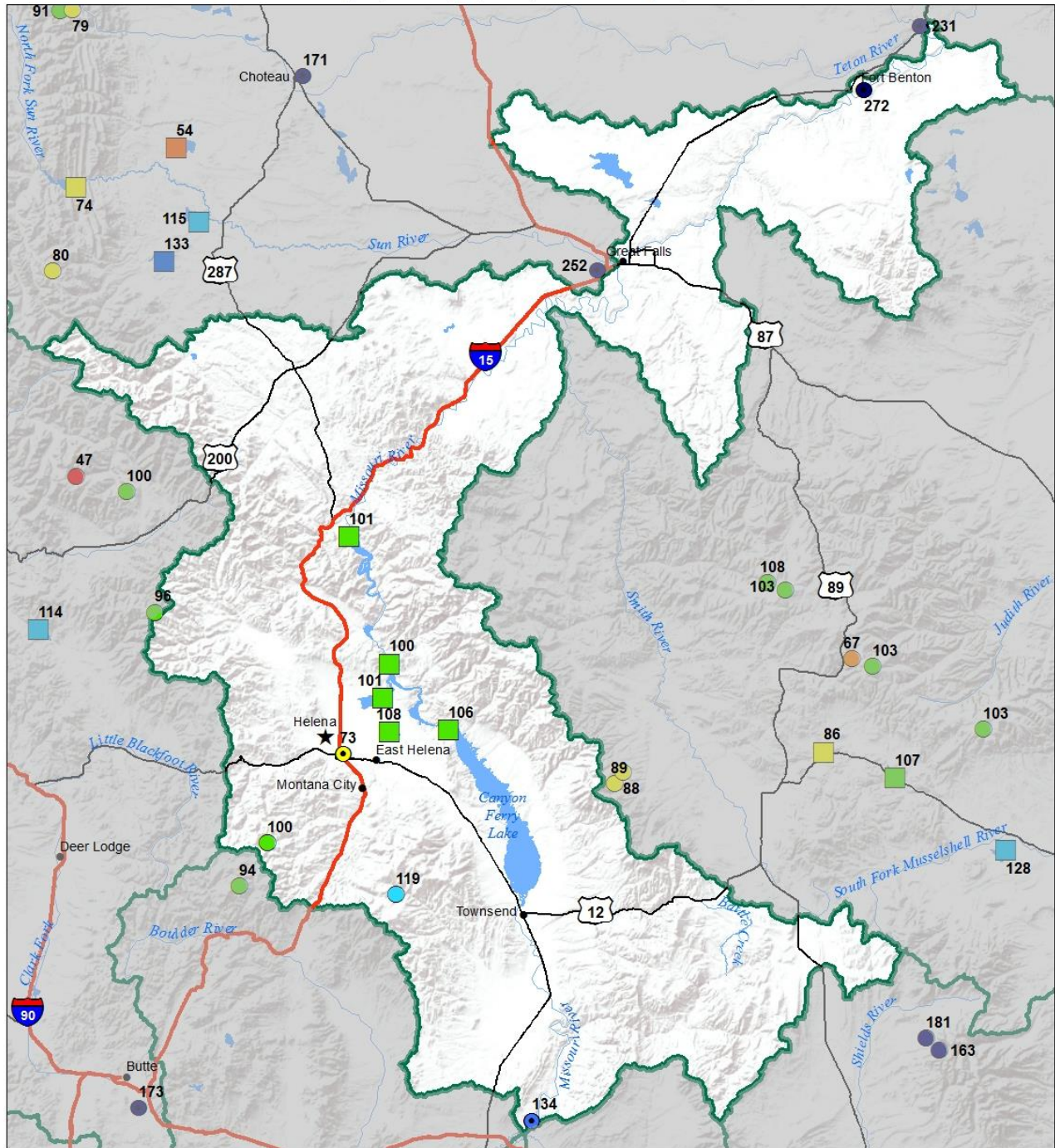
- ▲ > 150%
- ▲ 131 - 150%
- ▲ 111 - 130%
- ▲ 91 - 110%
- ▲ 71 - 90%
- ▲ 51 - 70%
- ▲ 1 - 50%



Headwaters Mainstem (Missouri) River Basin **Water Year to Date Precipitation and Reservoir Levels** **Percentage of Normal** **May 1, 2017**



Headwaters Mainstem (Missouri) River Basin Monthly Precipitation and Reservoir Levels Percentage of Normal May 1, 2017 (April 1, 2017 - May 1, 2017)



Precipitation Percent of Normal

SNOTEL

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

COOP/ACIS

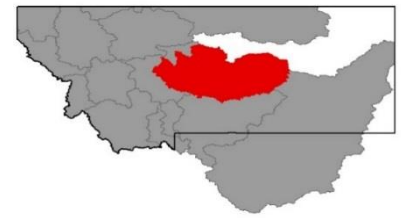
- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

Reservoirs Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%



Smith-Judith-Musselshell River Basin



Precipitation was above average during April in the Smith-Judith-Musselshell River basin. After a dry start to the month a significant precipitation event arrived during the second week of April. During this event it snowed 6+ inches at the upper elevations in the Little Belt Mountains and over a foot in the Big Snowy Mountains. The basin wide snowpack peak occurred on March 14th, however the storm during the second week of April came close driving it back up to a new peak. Currently the basin's snowpack at elevations above about 7000' is near normal, which is an improvement from last month. Lower elevation snowpack in the basin is well below normal and several of its snow measurement locations melted out mid-April. Overall, water year-to-date precipitation in the Smith-Judith-Musselshell River basin is slightly above average.

Smith Judith Musselshell River Basin Data Summary

Snowpack	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
SMITH	86%	85%
HIGHWOOD	%	%
JUDITH	76%	96%
MUSSELSHELL	96%	76%
Basin-Wide	83%	88%

Precipitation	Monthly Percentage of Average	WYTD Percentage of 1981-2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	115%	105%	100%
Valley Precipitation	142%	146%	120%
Basin-Wide Precipitation	119%	110%	102%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

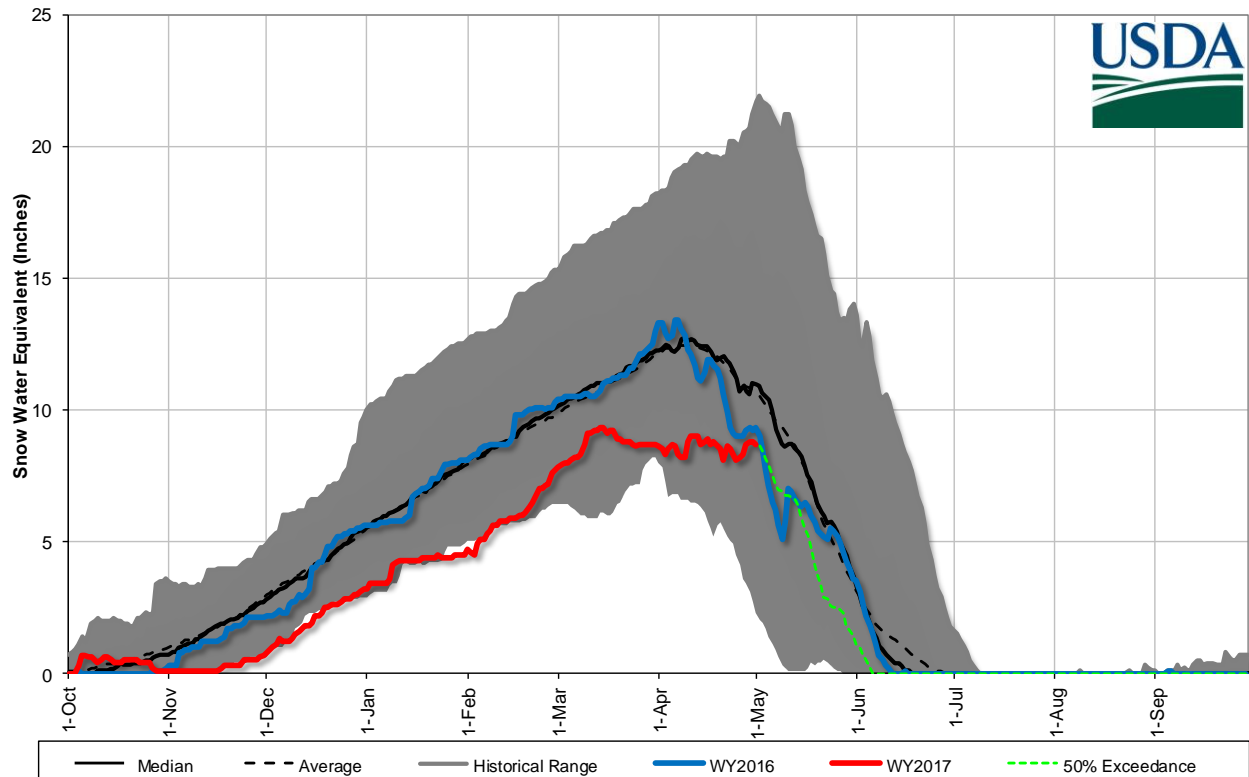
Reservoir Storage	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	116%	76%	131%

*See Reservoir Storage Table for storage in individual reservoirs

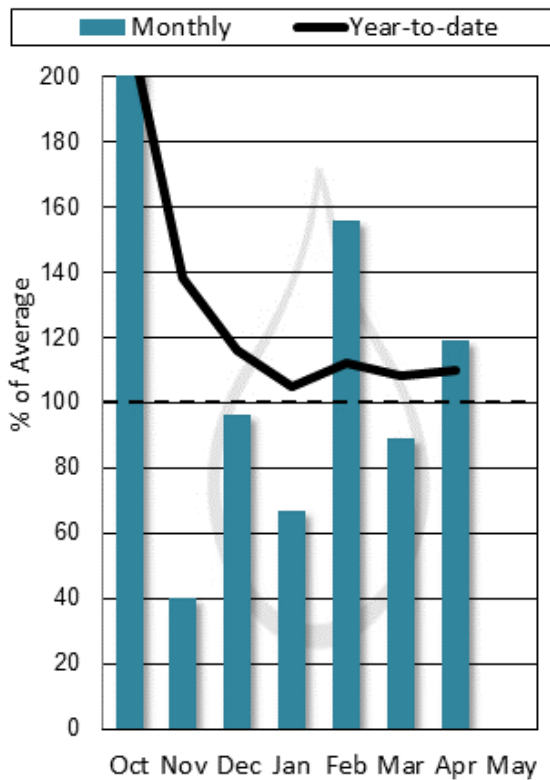
End of Month Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Smith River Res	7.1	8.5	8.3	10.6	86%	67%
Ackley Lake	3.6	4.5	3.3	7.0	110%	52%
Bair Res	4.8	5.4	4.5	7.0	107%	69%
Martinsdale Res	15.1	18.2	11.8	23.1	128%	65%
Deadman's Basin Res	60.6	66.7	51.0	72.2	119%	84%

Smith-Judith-Musselshell River Basin Snowpack with Non-Exceedence Projections

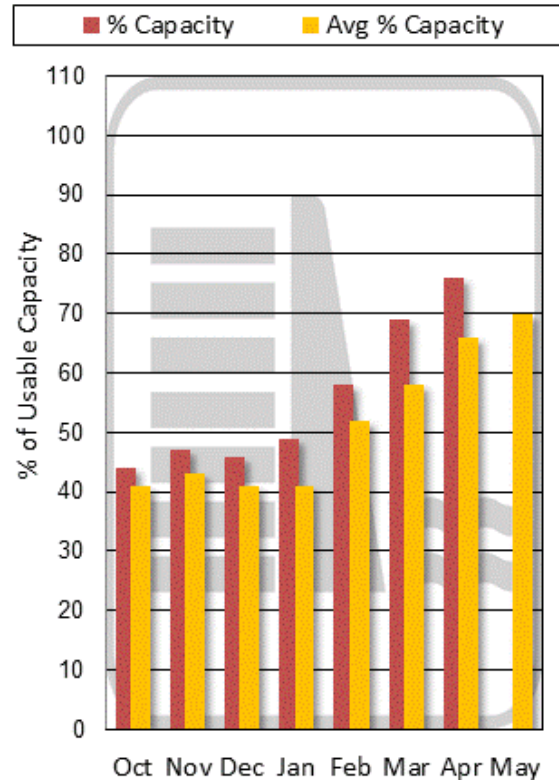
Based on provisional SNOTEL daily data as of 5/1/2017



Mountain and Valley Precipitation



End of Month Reservoir Storage



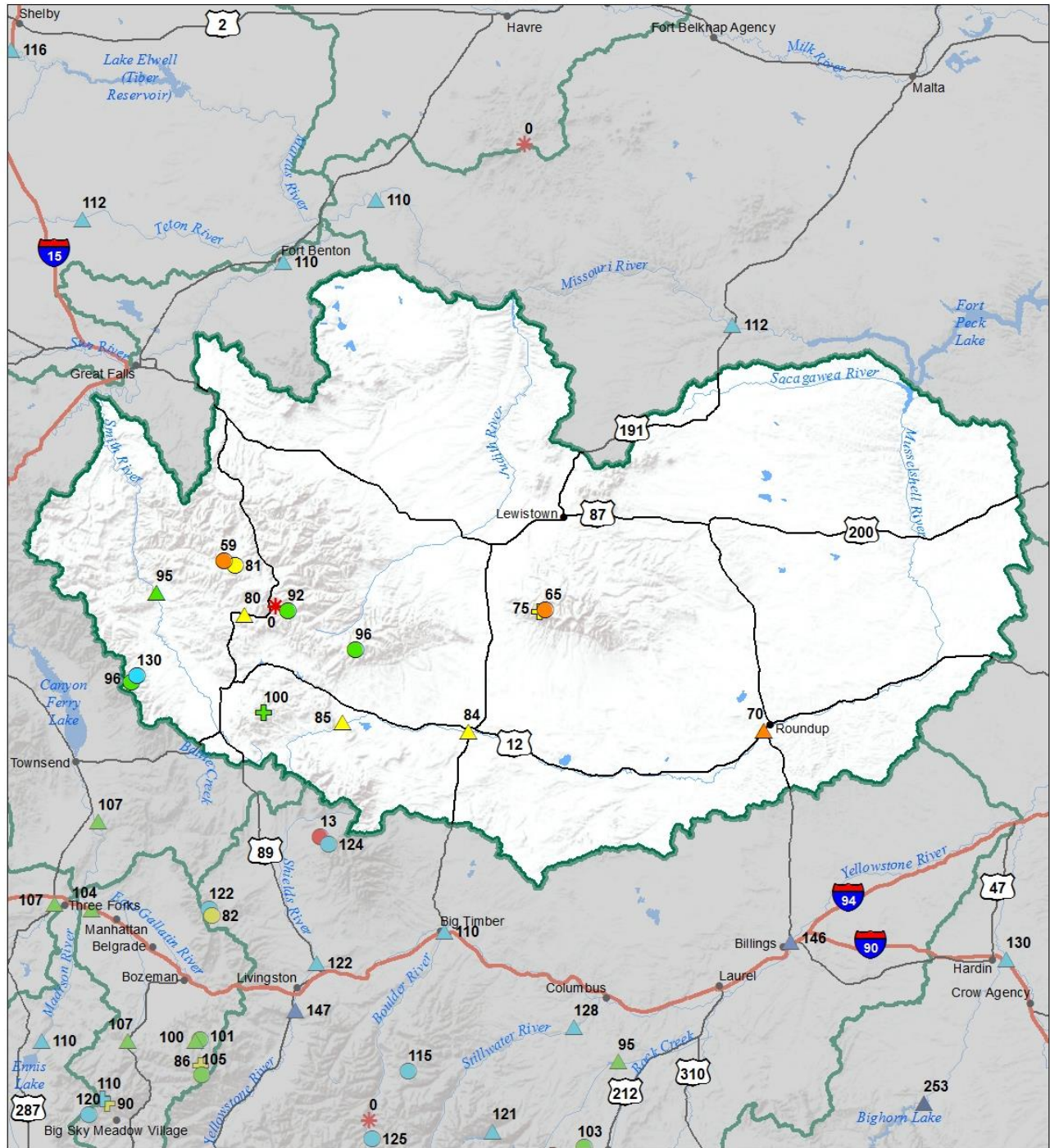
Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Smith-Judith-Musselshell

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Sheep Ck nr White Sulphur Springs	MAY-JUL	5.4	8.4	10.4	78%	12.4	15.4	13.4
	MAY-SEP	6.9	10.5	13	80%	15.5	19.1	16.2
Smith R bl Eagle Ck ²	MAY-JUL	38	65	84	94%	103	130	89
	MAY-SEP	38	71	94	95%	116	150	99
NF Musselshell R nr Delpine								
SF Musselshell R ab Martinsdale	MAY-JUL	0.27	19.2	32	86%	45	64	37
	MAY-SEP	1.09	21	34	85%	47	67	40
Musselshell R at Harlowton ²	MAY-JUL	10.2	29	41	85%	53	72	48
	MAY-SEP	6.9	28	42	84%	56	77	50
Musselshell R nr Roundup ²	MAY-JUL	9.7	28	40	74%	52	70	54
	MAY-SEP	6.5	25	38	70%	51	70	54

1) 90% and 10% exceedance probabilities are actually 95% and 5%

Smith-Judith-Musselshell River Basin Streamflow Forecast, Snow Water Equivalent Percentage of Normal May 1, 2017



Snow Water Equivalent Percent of Normal

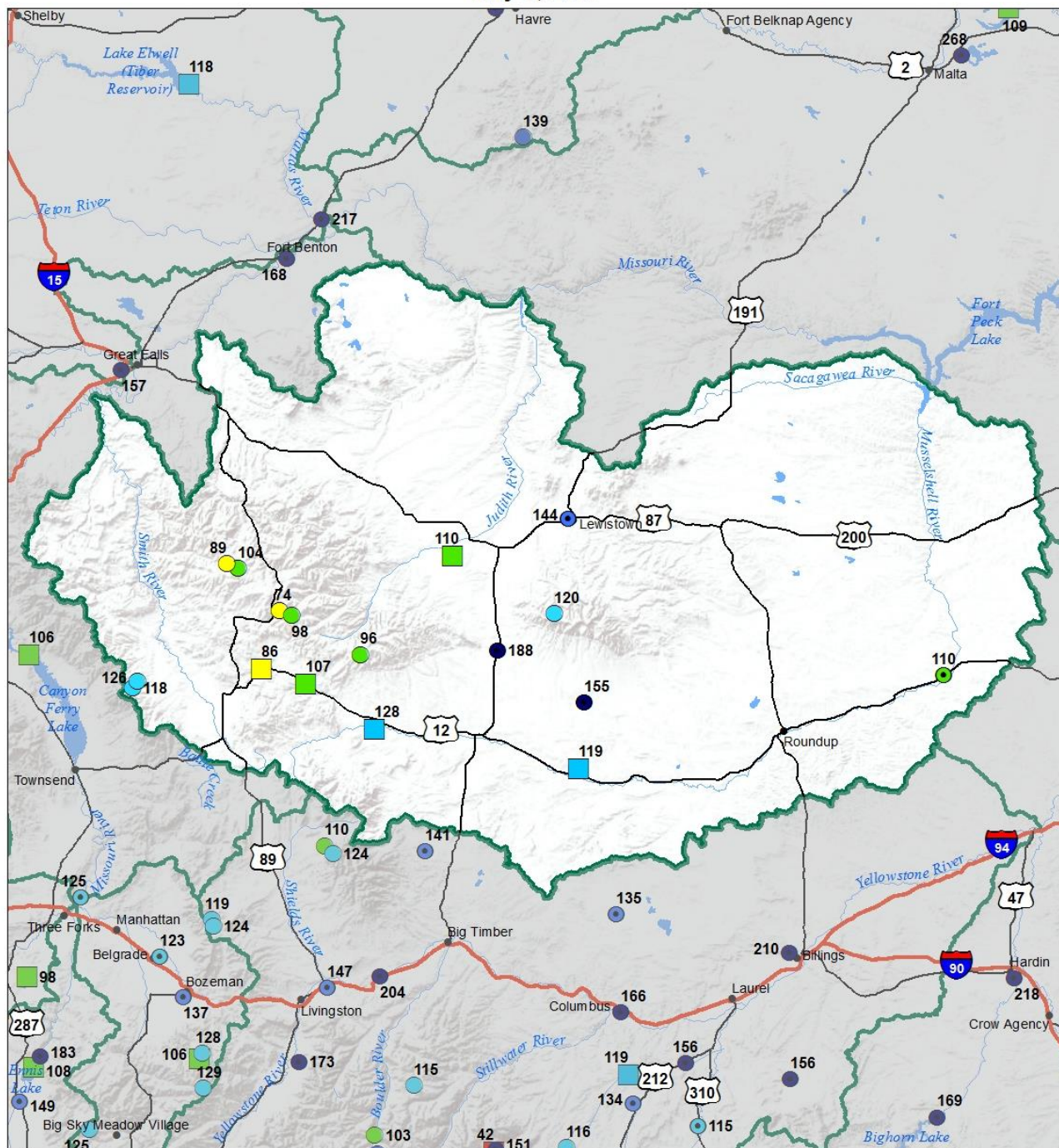
SNOTEL		Snowcourse	
● > 150%	● 71 - 90%	✚ > 150%	✚ 71 - 90%
● 131 - 150%	● 51 - 70%	✚ 131 - 150%	✚ 51 - 70%
● 111 - 130%	● 1 - 50%	✚ 111 - 130%	✚ 1 - 50%
● 91 - 110%	✱ 0%	✚ 91 - 110%	✱ 0%

Streamflow Forecast Percent of Average Flows

▲ > 150%
▲ 131 - 150%
▲ 111 - 130%
▲ 91 - 110%
▲ 71 - 90%
▲ 51 - 70%
▲ 1 - 50%



Smith-Judith-Musselshell River Basin Water Year to Date Precipitation and Reservoir Levels Percentage of Normal May 1, 2017



Precipitation Percent of Normal

SNOTEL

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

- 71 - 90%
- 51 - 70%
- 1 - 50%

COOP/ACIS

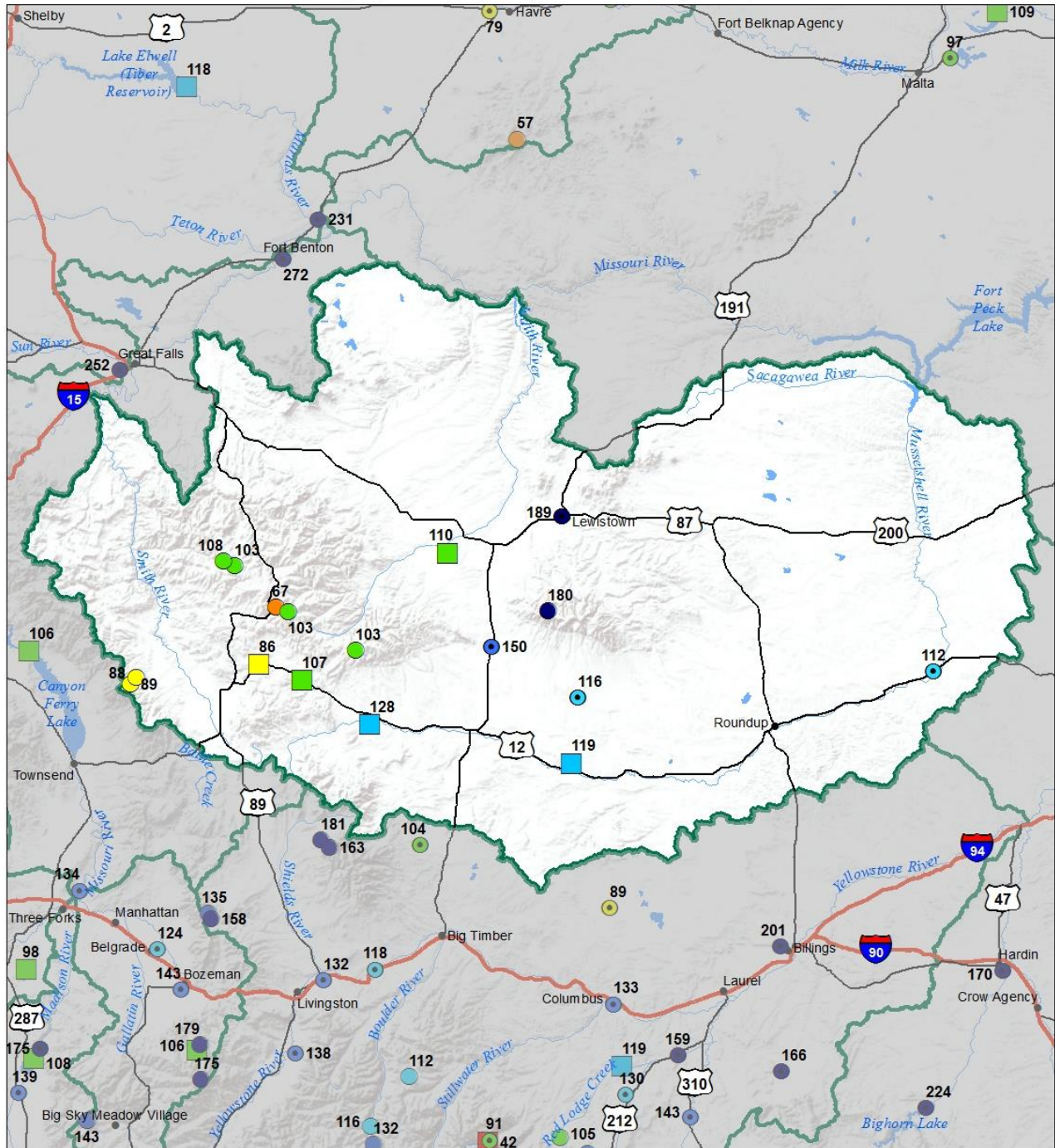
- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

Reservoirs Percent of Normal

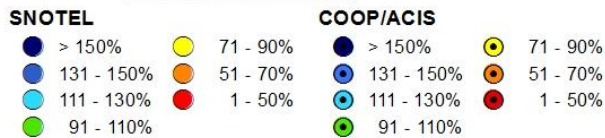
- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%



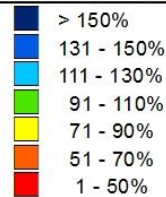
Smith-Judith-Musselshell River Basin Monthly Precipitation and Reservoir Levels Percentage of Normal May 1, 2017 (April 1, 2017 - May 1, 2017)



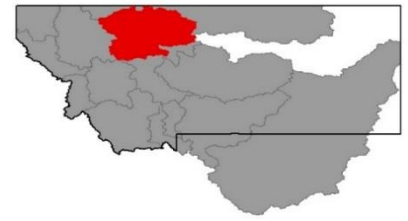
Precipitation Percent of Normal



Reservoirs Percent of Normal



Sun-Teton-Marias River Basin



After receiving well above average precipitation in February and March, April precipitation in the Sun-Teton-Marias River basin was slightly below average. With that said, the basin is doing much better than last year at this time. On May 1st, 2016 the basin wide snowpack was at a record low and 8 of its 10 snow measurement locations had no snow or were within inches of being melted out. The basin wide snowpack typically peaks around April 7th and this year it peaked on April 18th. Badger Pass SNOTEL still has 83 inches of snow (39.7 inches SWE) and is at 135% of normal. The only site currently melted out in the basin is Cabin Creek Snow Course, which is the basin's lowest elevation site. Overall, water year-to-date precipitation in the Sun-Teton- Marias River basin is above average.

Sun-Teton-Marias River Basin Data Summary

Snowpack	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
SUN	131%	31%
TETON	128%	33%
MARIAS	121%	38%
Basin-Wide	129%	34%

Precipitation	Monthly Percentage of Average	WYTD Percentage of 1981-2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	81%	119%	79%
Valley Precipitation	132%	145%	95%
Basin-Wide Precipitation	95%	125%	83%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

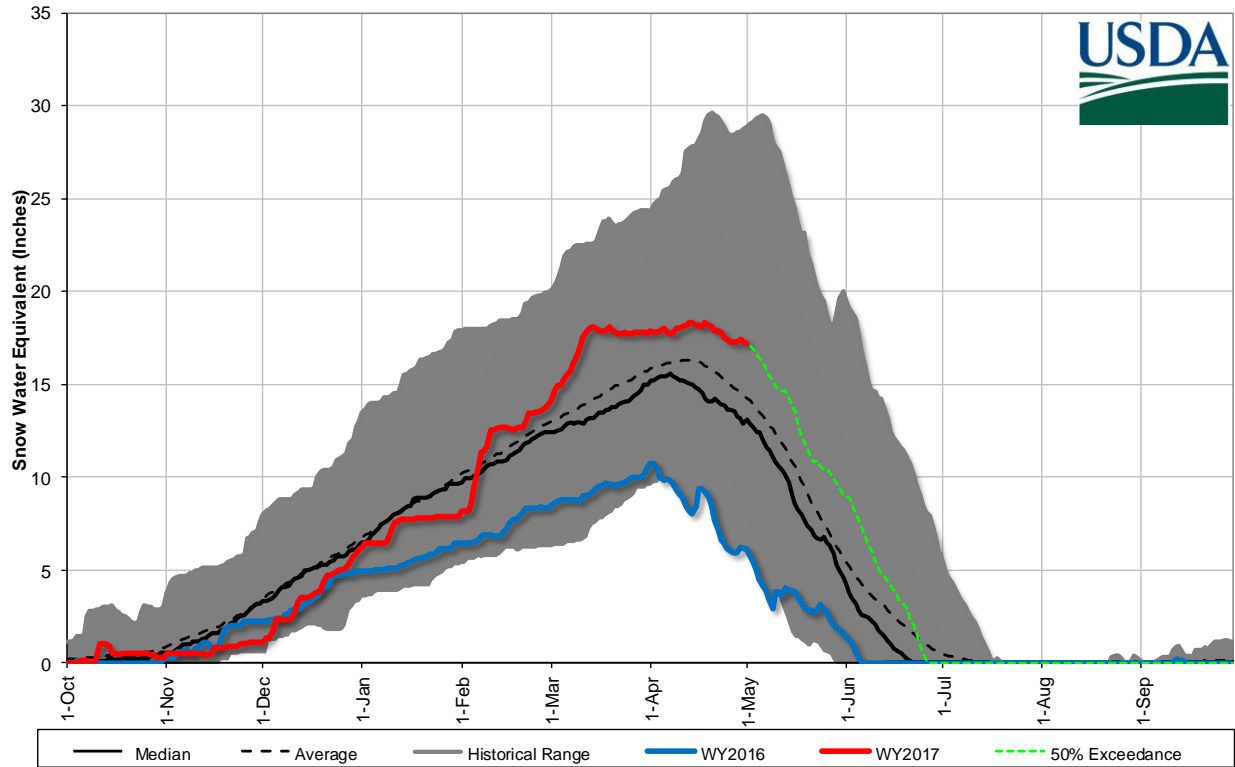
Reservoir Storage	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	111%	61%	103%

*See Reservoir Storage Table for storage in individual reservoirs

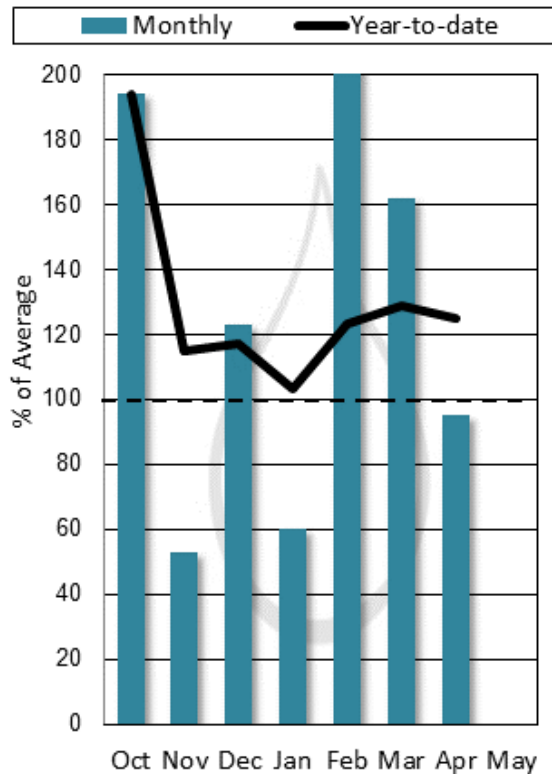
End of Month Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Gibson Res	46.0	76.3	62.6	99.1	74%	46%
Pishkun Res	12.6	24.9	23.3	32.0	54%	40%
Willow Creek Res - Augusta	29.4	28.7	25.6	32.2	115%	91%
Lower Two Medicine Lake	9.6	10.5	10.5	11.9	91%	80%
Four Horns Lake	11.8	12.3	10.5	19.2	113%	62%
Swift Res	10.7	20.3	18.1	30.0	59%	36%
Lake Frances	67.9	53.8	66.6	112.0	102%	61%
Lake Elwell (Tiber)	842.2	735.9	716.2	1347.0	118%	63%
Nilan Reservoir	10.4	9.3	7.8	11.0	133%	94%

Sun-Teton-Marias River Basin Snowpack with Non-Exceedence Projections

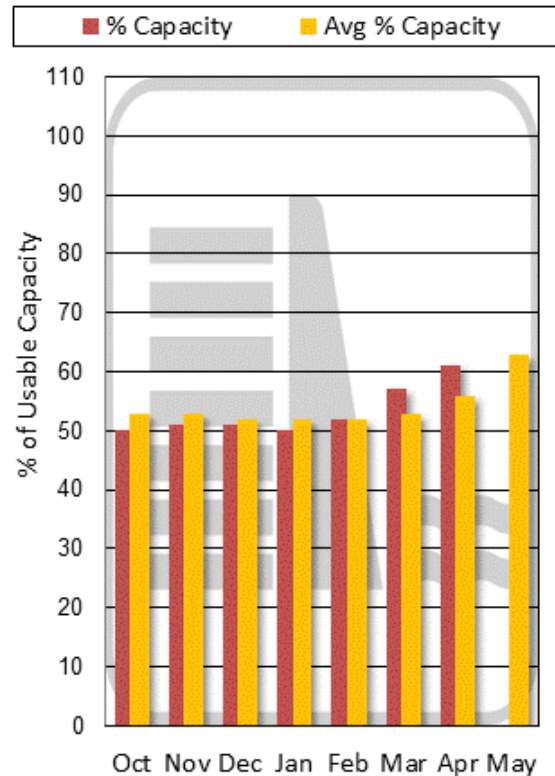
Based on provisional SNOTEL daily data as of 5/1/2017



Mountain and Valley Precipitation



End of Month Reservoir Storage



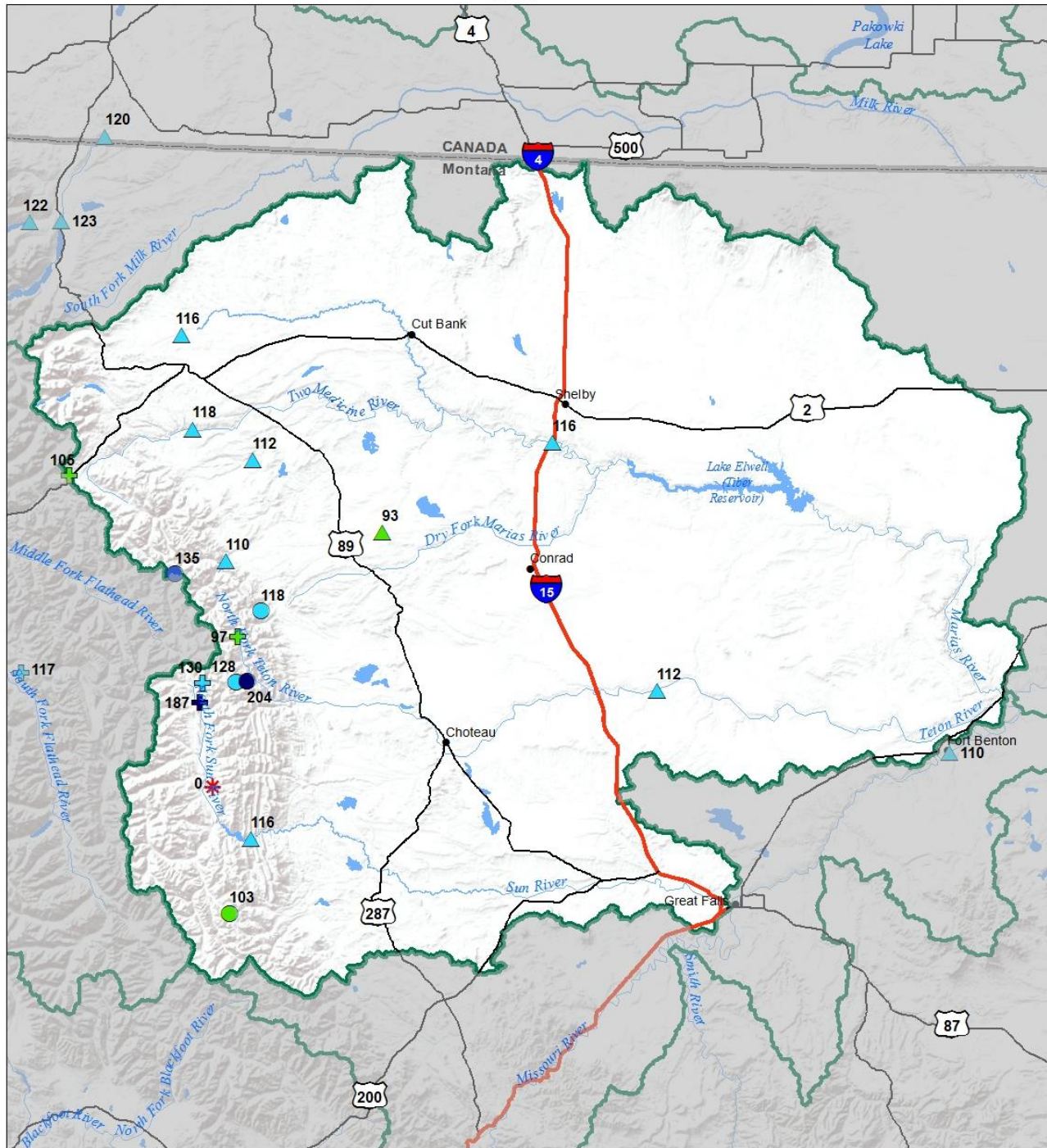
Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Sun-Teton-Marias Basins

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Gibson Reservoir Inflow	MAY-JUL	350	390	415	117%	440	480	355
	MAY-SEP	385	430	460	116%	490	530	395
Two Medicine R nr Browning ²	MAY-JUL	144	167	182	119%	197	220	153
	MAY-SEP	154	178	194	118%	210	235	164
Badger Ck nr Browning	MAY-JUL	66	79	88	114%	97	110	77
	MAY-SEP	77	93	103	112%	113	129	92
Swift Reservoir Inflow ²	MAY-JUL	38	48	55	112%	62	72	49
	MAY-SEP	46	58	66	110%	74	86	60
Dupuyer Ck nr Valier	MAY-JUL	3.7	6.6	8.5	93%	10.4	13.3	9.1
	MAY-SEP	4.5	7.7	9.9	93%	12.1	15.3	10.7
Cut Bank Ck nr Browning	MAY-JUL	55	65	72	116%	80	90	62
	MAY-SEP	60	71	79	116%	87	99	68
Marias R nr Shelby ²	MAY-JUL	230	300	345	115%	390	460	300
	MAY-SEP	240	315	365	116%	415	490	315
Teton R nr Dutton	MAY-JUL	17	31	39	111%	48	61	35
	MAY-SEP	5.7	30	46	112%	63	87	41

1) 90% and 10% exceedance probabilities are actually 95% and 5%

**Sun-Teton-Marias River Basin
Streamflow Forecast, Snow Water Equivalent
Percentage of Normal
May 1, 2017**



**Snow Water Equivalent
Percent of Normal**

SNOTEL

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

Snowcourse

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

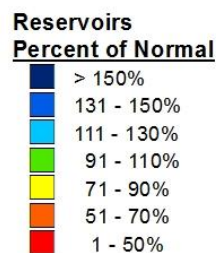
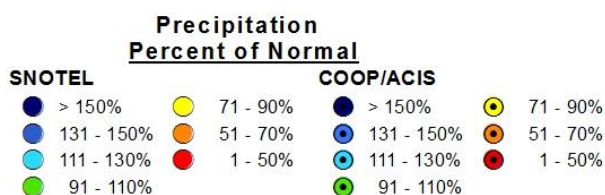
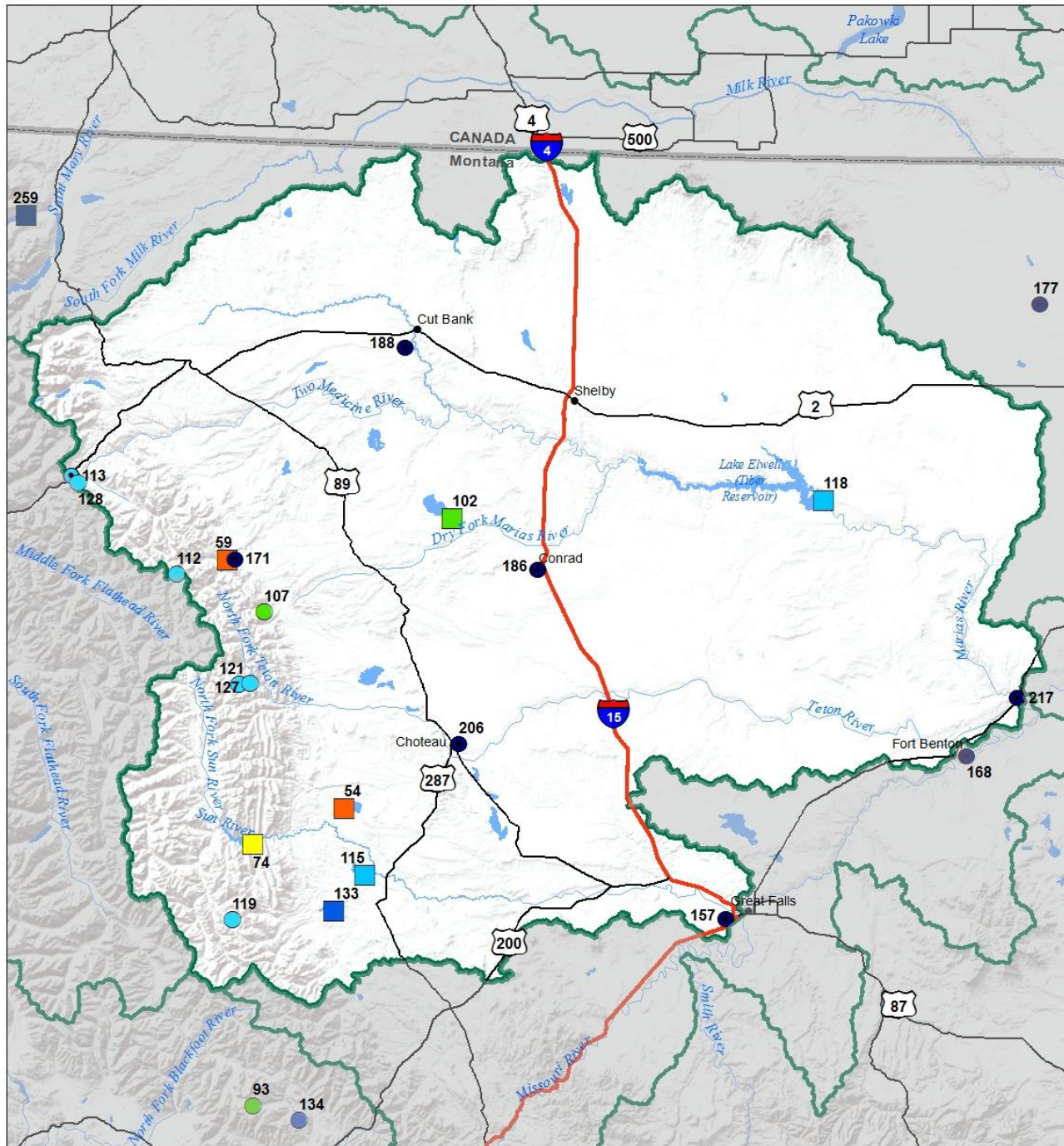
- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

**Streamflow Forecast
Percent of Average Flows**

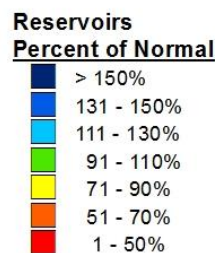
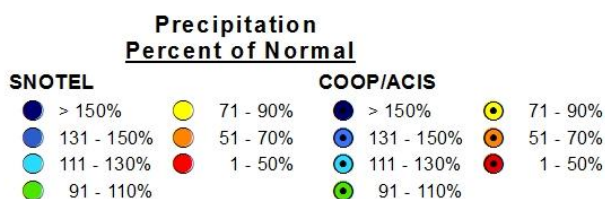
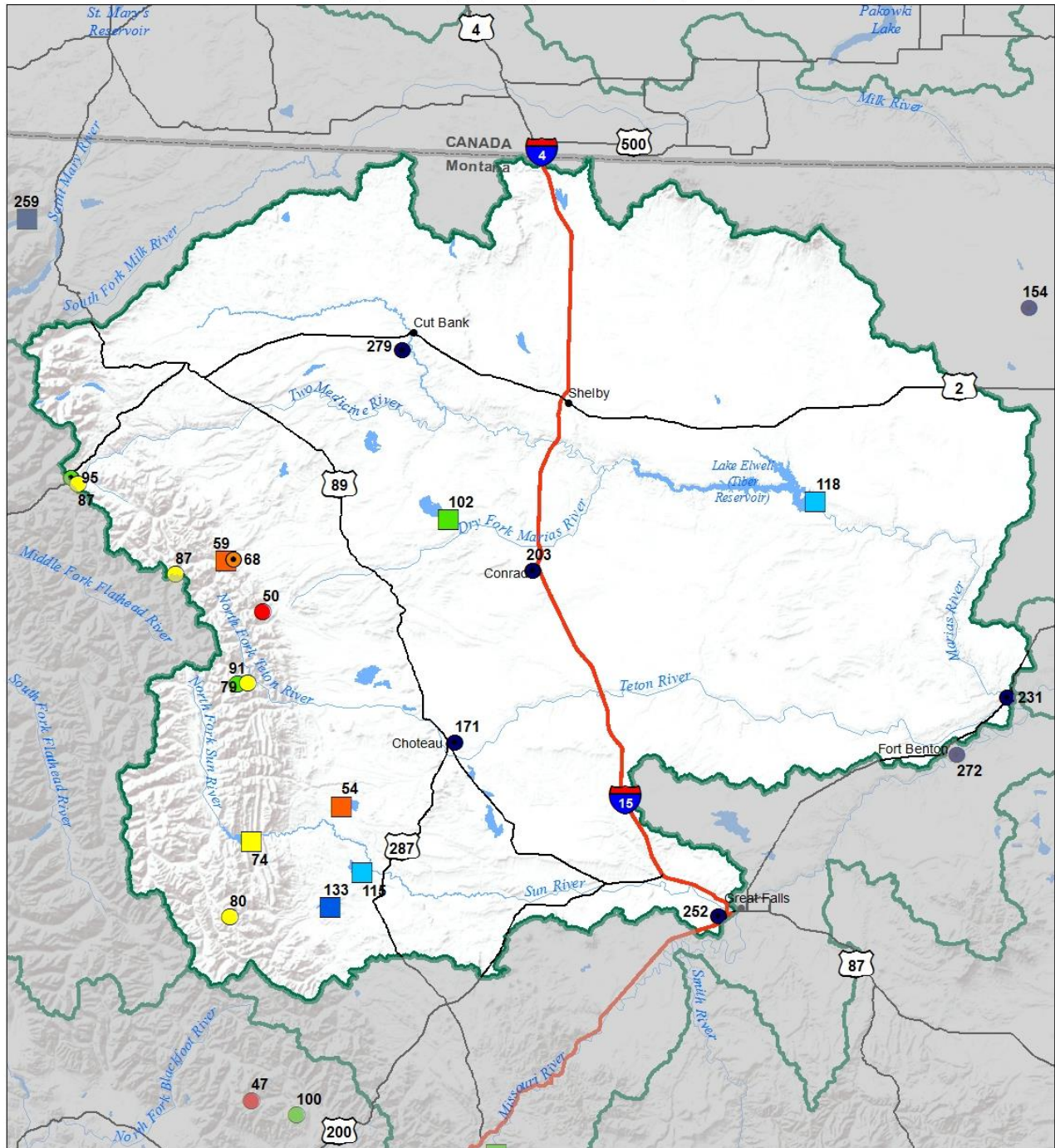
- ▲ > 150%
- ▲ 131 - 150%
- ▲ 111 - 130%
- ▲ 91 - 110%
- ▲ 71 - 90%
- ▲ 51 - 70%
- ▲ 1 - 50%



Sun-Teton-Marias River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017



Sun-Teton-Marias River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)



St. Mary-Milk River Basin



Precipitation was above average in the Saint Mary River basin and below average in the Milk River basin during April. In the Saint Mary, mountain precipitation arrived steadily throughout the month, however about half of the April total came during the last week of the month. Typically seeing its snowpack peak near mid-April, Flattop Mountain SNOTEL is still accumulating snow and during the last week of the month it received over a foot of snow. Snow Courses near Many Glacier are doing much better than they were last year at this time. Mount Allen Snow Course currently has 96 inches of snow (40 inches SWE) compared to 40 inches of snow (18 inches SWE) last year. Overall, water year-to-date precipitation in the Saint Mary-Milk River basin is well above average.

St. Mary-Milk River Basin Data Summary

Snowpack	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
ST. MARY	125%	63%
BEARPAW MOUNTAINS	0%	0%
CYPRESS HILLS, CANADA	%	%
MILK RIVER BASIN	0%	0%
Basin-Wide	124%	62%

Precipitation	Monthly Percentage of Average	WYTD Percentage of 1981-2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation (St. Mary)	122%	135%	100%
Mountain Precipitation (Bearpaw Mtns)	82%	151%	125%
Valley Precipitation	107%	196%	192%
Basin-Wide Precipitation	105%	149%	121%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

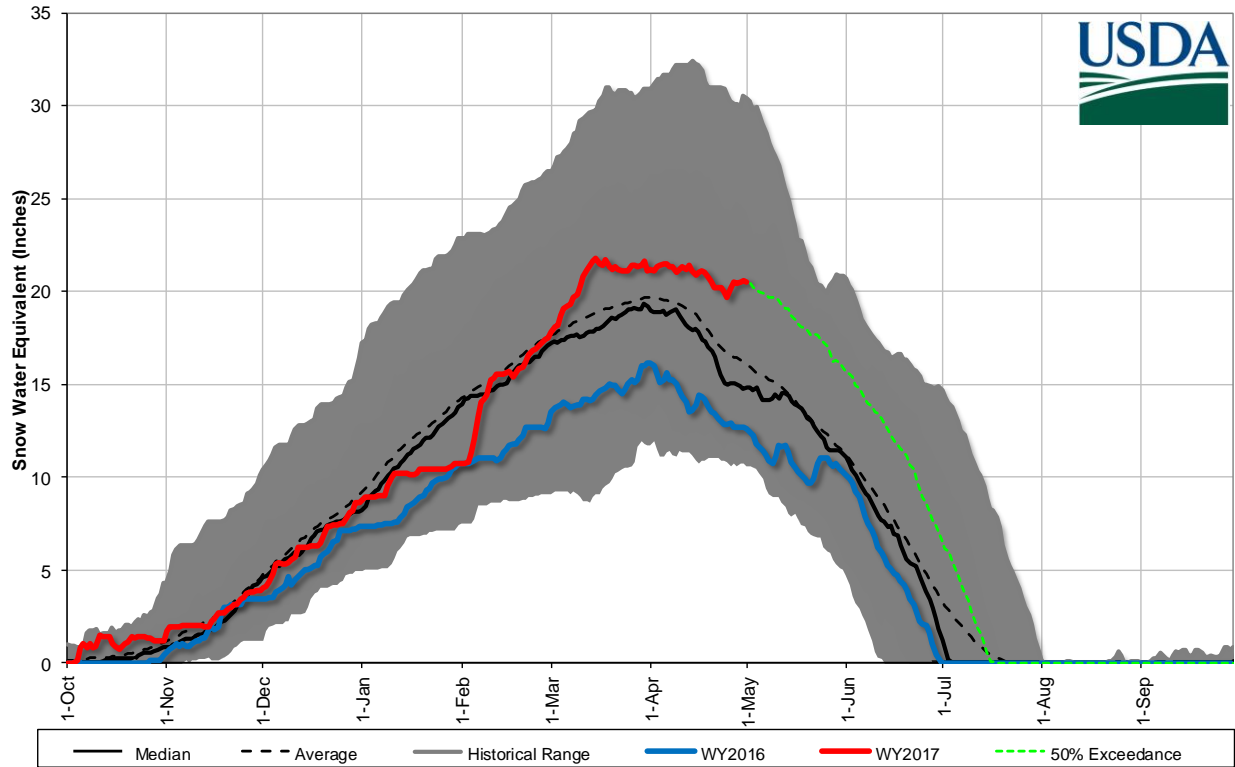
Reservoir Storage	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	134%	70%	125%

*See Reservoir Storage Table for storage in individual reservoirs

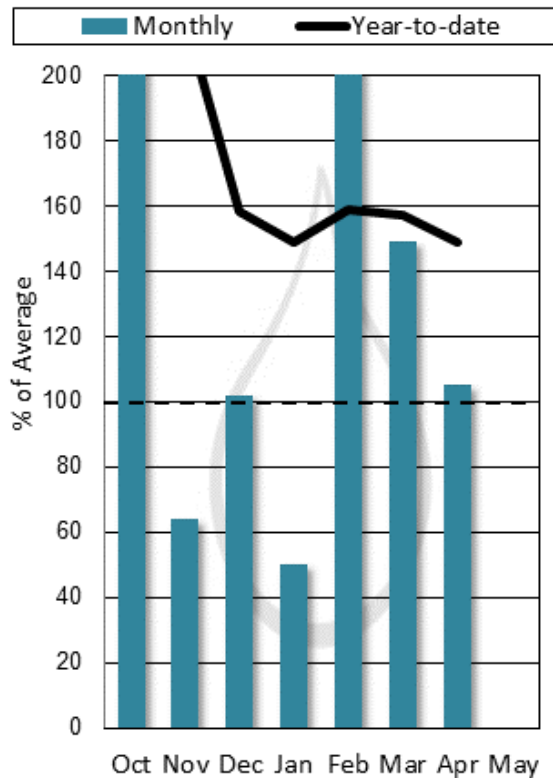
End of Month Storage

	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Lake Sherburne	46.7	33.1	18.0	64.3	259%	73%
Fresno Res	87.7	85.7	74.9	127.0	117%	69%
Nelson Res	46.3	50.4	42.4	66.8	109%	69%

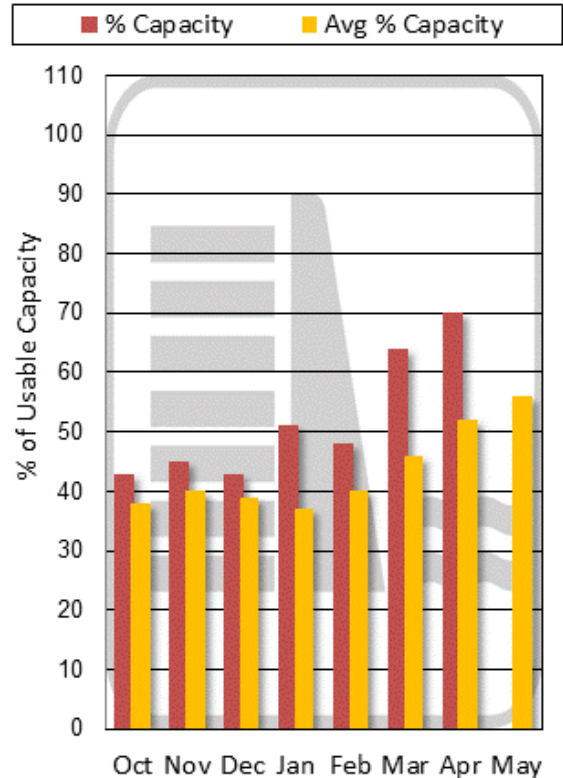
Saint Mary-Milk River Basin Snowpack with Non-Exceedence Projections
Based on provisional SNOTEL daily data as of 5/1/2017



**Mountain and Valley
Precipitation**



**End of Month Reservoir
Storage**



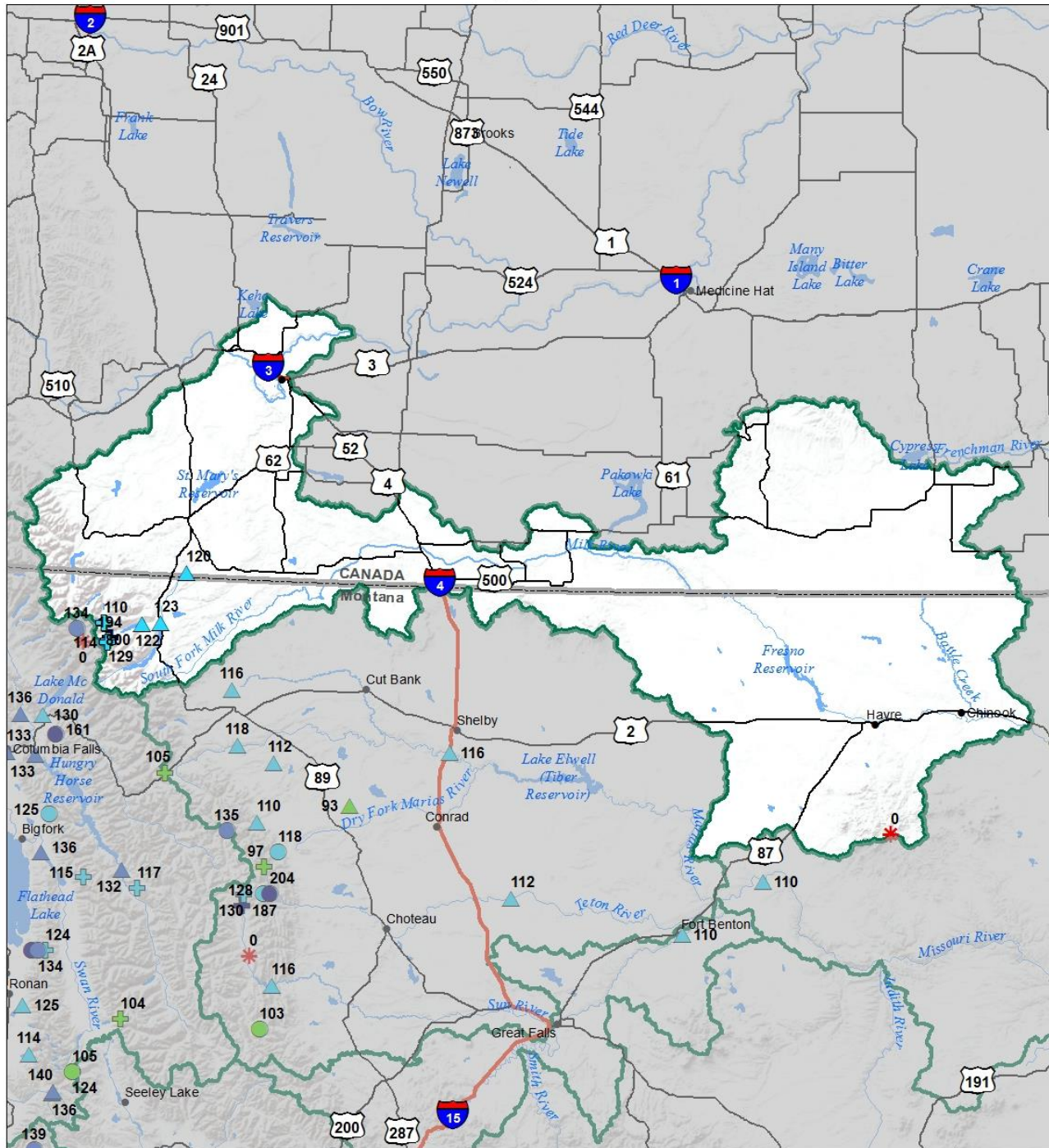
Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

St. Mary River Basin

		Chance Actual Volume Will Exceed Forecasted Volume						
ST. MARY & MILK BASINS		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Lake Sherburne Inflow	MAY-JUL	90	100	107	124%	114	124	86
	MAY-SEP	104	115	123	122%	131	142	101
Two Medicine R nr Browning ²	MAY-JUL	360	400	425	125%	450	490	340
	MAY-SEP	410	455	485	123%	515	560	395
Badger Ck nr Browning	MAY-JUL	400	455	495	124%	535	590	400
	MAY-SEP	460	525	565	120%	610	670	470

1) 90% and 10% exceedance probabilities are actually 95% and 5%

**St Mary's-Milk River Basin
Streamflow Forecast, Snow Water Equivalent
Percentage of Normal
May 1, 2017**



**Snow Water Equivalent
Percent of Normal**

SNOTEL

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

Snowcourse

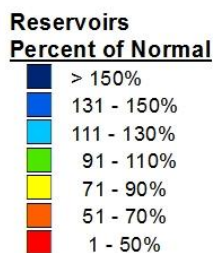
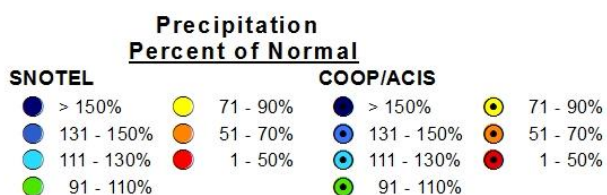
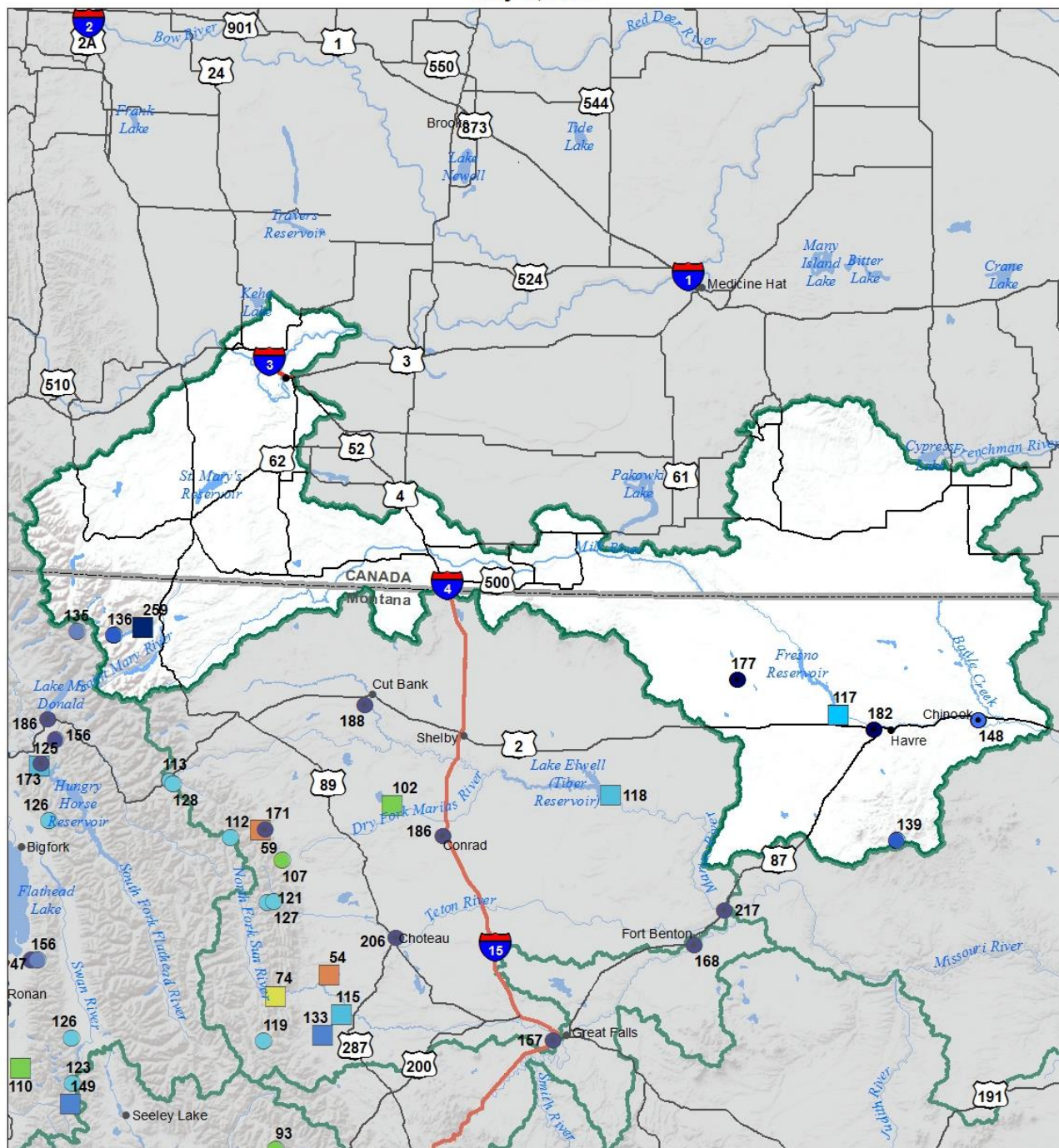
- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%
- 0%

**Streamflow Forecast
Percent of Average Flows**

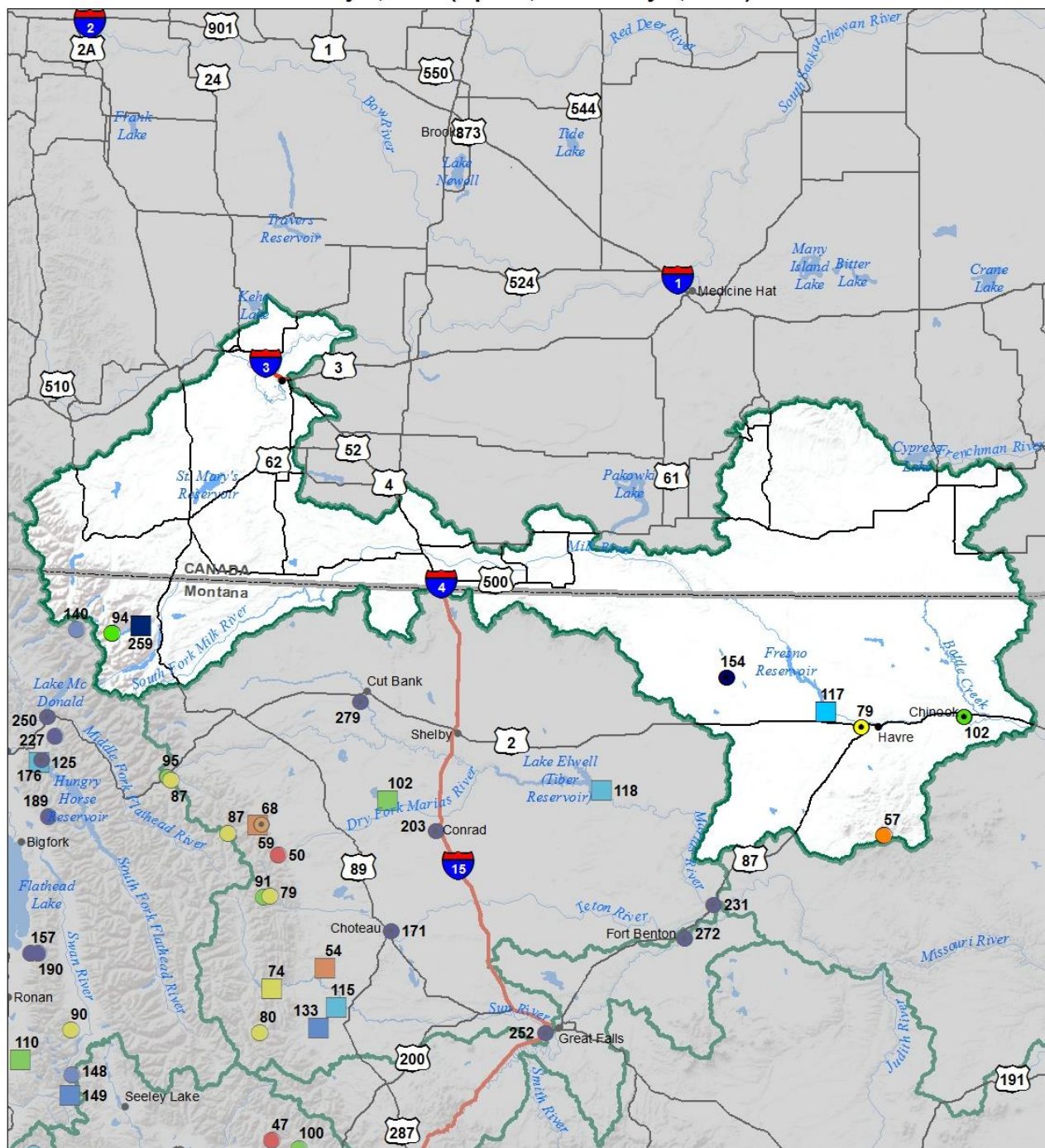
- ▲ > 150%
- ▲ 131 - 150%
- ▲ 111 - 130%
- ▲ 91 - 110%
- ▲ 71 - 90%
- ▲ 51 - 70%
- ▲ 1 - 50%



St Mary's-Milk River Basin Water Year to Date Precipitation and Reservoir Levels Percentage of Normal May 1, 2017



St Mary's-Milk River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)



**Precipitation
Percent of Normal**








SNOTEL

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%

COOP/ACIS

 > 150%  71 - 90%
 131 - 150%  51 - 70%
 111 - 130%  1 - 50%
 91 - 110%

Reservoirs
Percent of Normal

	> 150%
	131 - 150%
	111 - 130%
	91 - 110%
	71 - 90%
	51 - 70%
	1 - 50%



Montana State Library
Natural Resource
Information System



Upper Yellowstone River Basin

After a disappointing water year last summer, when streamflows were approaching record low in late August and September due to below normal snowpack and early runoff, this year looks to bring welcome change with regards to water supply. Precipitation was above average during April in the Upper Yellowstone River basin. As of May 1st upper elevations in and around Yellowstone National Park are still accumulating snowpack. Adding to an already big snow year in Cooke City, Fisher Creek SNOTEL accumulated 188% of its typical April snow water and continues to gain snowpack, which typically peaks around mid-May. About 20 miles to the south Parker Peak SNOTEL has its largest snowpack in 36 years of record. The snowpack in eastern Gallatin Range also saw significant improvement during the month, improving from near record low on April 1 to near to above normal on May 1. Overall, water year-to-date precipitation in the Upper Yellowstone River basin is well above average. The well above normal snowpack through this winter, and on May 1st should provide ample water supply to the basin this spring and summer. Streamflow forecasts are mostly well above average for the May 1st – July 31st time period, but some in the eastern half of the basin are near average. Please reference the streamflow table for individual forecasts within the basin.

Upper Yellowstone River Basin Data Summary

Snowpack

	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
YELLOWSTONE ab LIVINGSTON	146%	68%
SHIELDS	112%	81%
BOULDER-STILLWATER	112%	75%
RED LODGE-ROCK CREEK	120%	73%
CLARK'S FORK	164%	85%
Basin-Wide	137%	76%

Precipitation

	Monthly Percentage of Average	WYTD Percentage of 1981-2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	142%	143%	93%
Valley Precipitation	132%	155%	102%
Basin-Wide Precipitation	140%	145%	94%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

Reservoir Storage

	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	117%	54%	121%

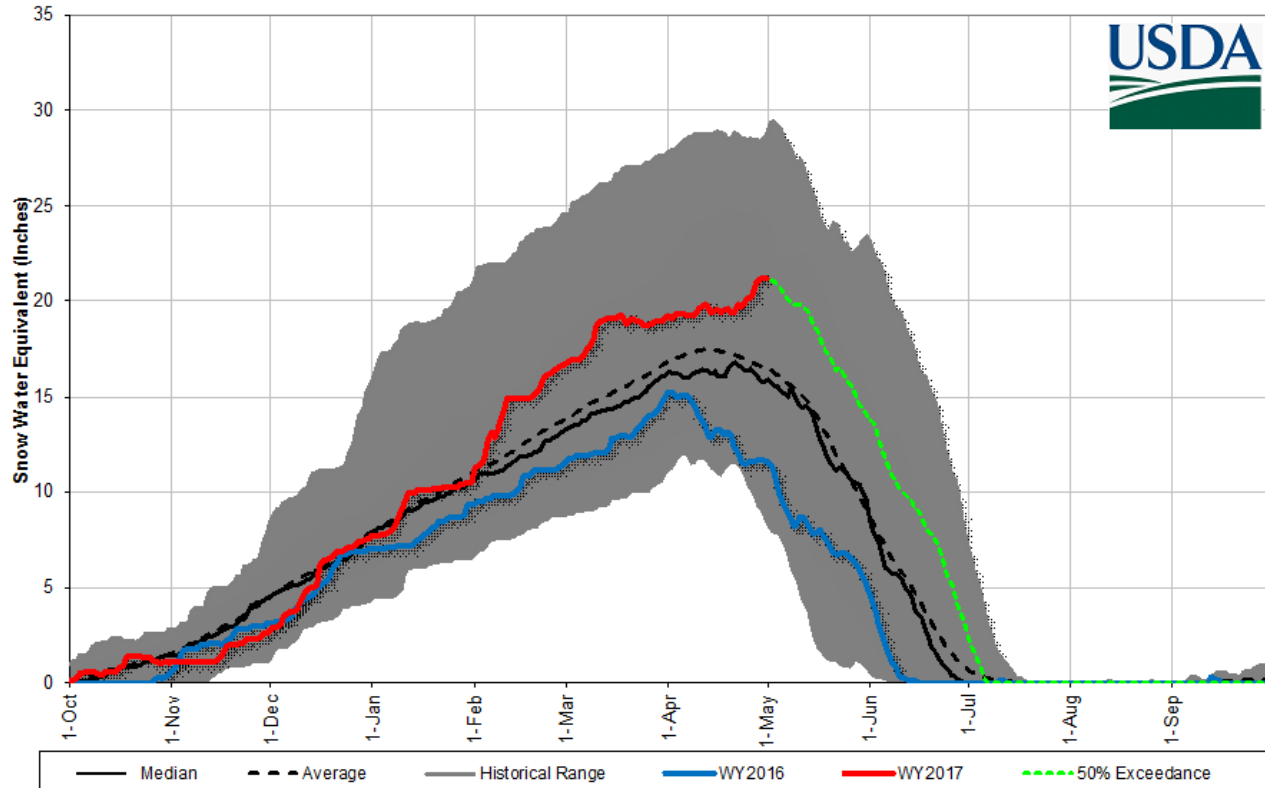
*See Reservoir Storage Table for storage in individual reservoirs

End of Month Storage

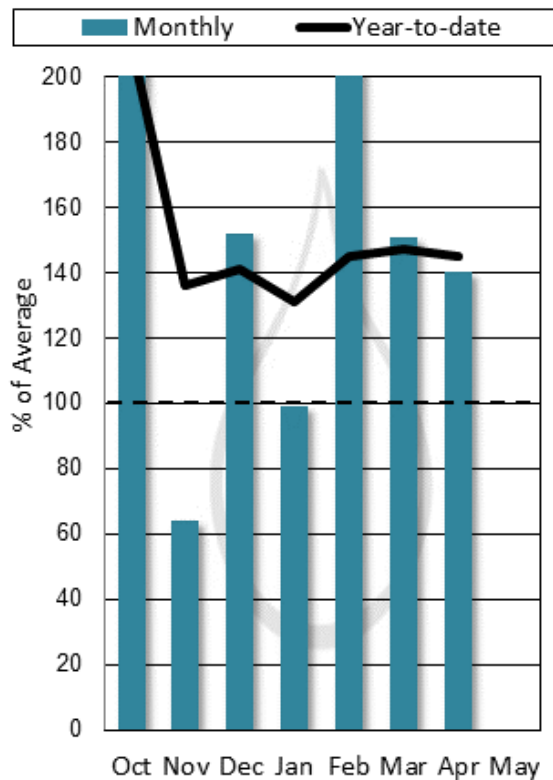
	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Mystic Lake	0.2	1.1	0.6	21.0	42%	1%
Cooney Res	26.0	26.0	21.9	27.4	119%	95%

Upper Yellowstone River Basin Snowpack with Non-Exceedence Projections

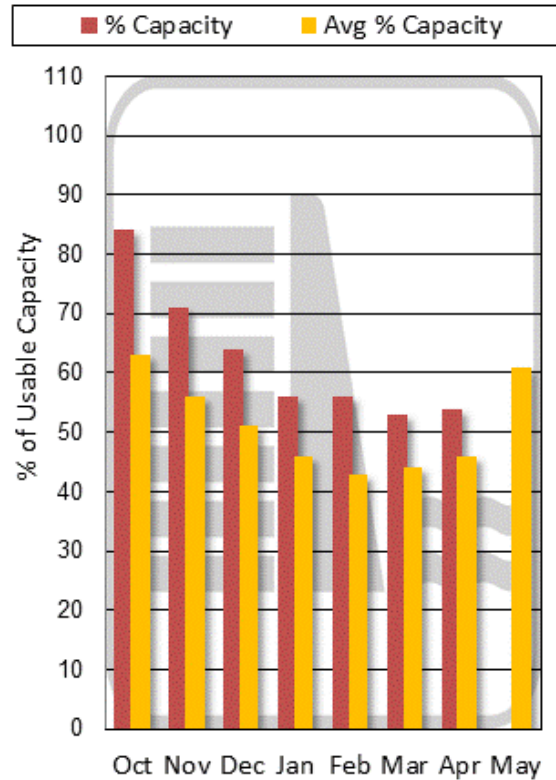
Based on provisional SNOTEL daily data as of 5/1/2017



Mountain and Valley Precipitation



End of Month Reservoir Storage



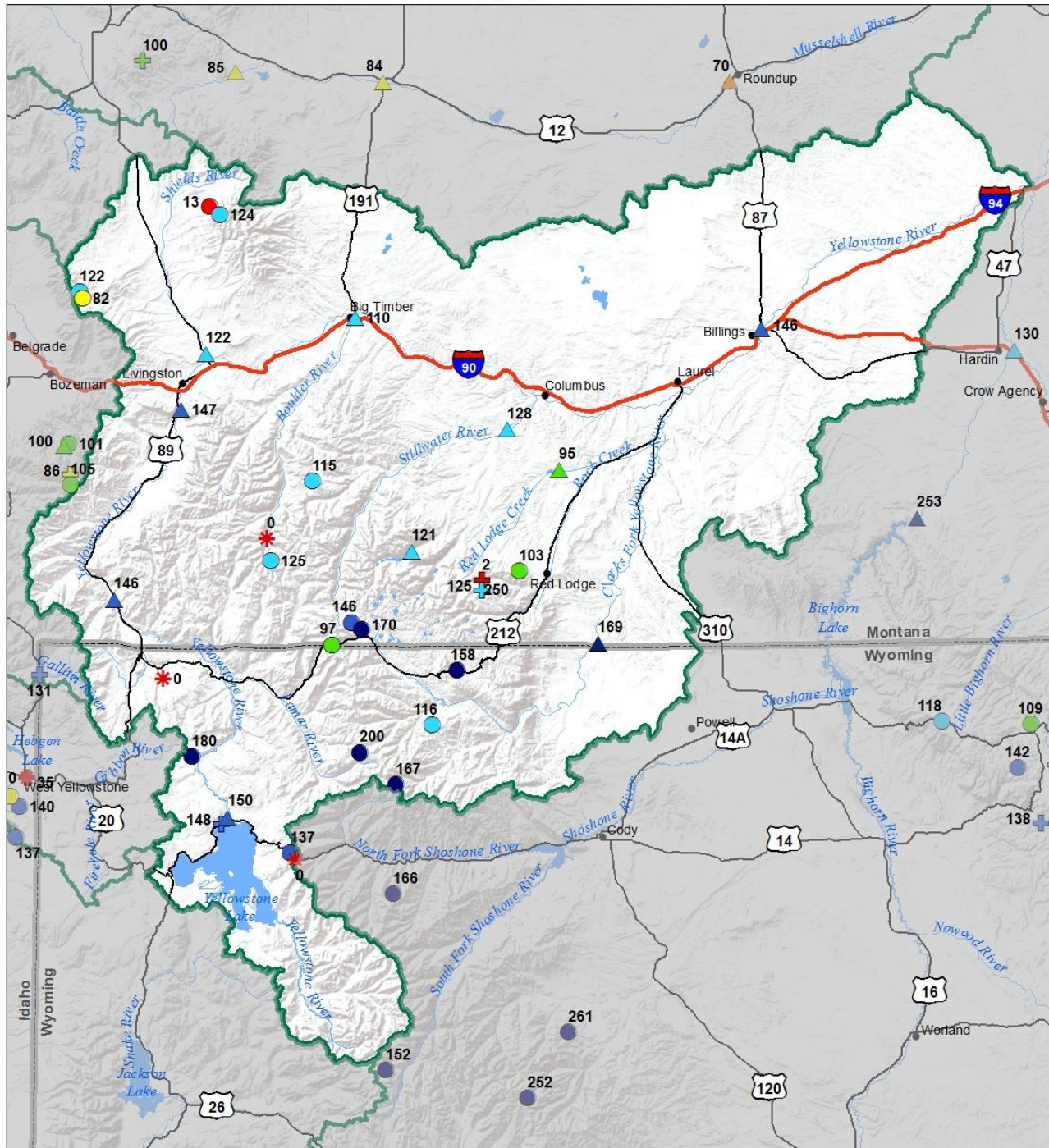
Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Upper Yellowstone River Basin

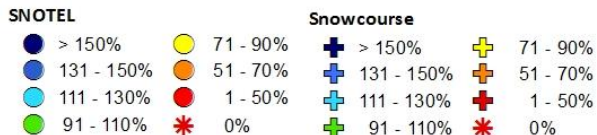
Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Yellowstone R at Yellowstone Lake Outlet	MAY-JUL	710	770	815	150%	860	920	545
	MAY-SEP	960	1040	1100	150%	1160	1250	735
Yellowstone R at Corwin Springs	MAY-JUL	1930	2080	2180	147%	2280	2430	1480
	MAY-SEP	2260	2460	2590	146%	2720	2920	1770
Yellowstone R at Livingston	MAY-JUL	2180	2370	2500	150%	2620	2810	1670
	MAY-SEP	2600	2810	2960	147%	3110	3330	2010
Shields R nr Livingston	MAY-JUL	84	116	137	127%	158	190	108
	MAY-SEP	92	127	150	122%	173	210	123
Boulder R at Big Timber	MAY-JUL	240	275	300	111%	325	360	270
	MAY-SEP	250	295	320	110%	345	390	290
Mystic Lake Inflow ²	MAY-JUL	60	64	67	118%	70	74	57
	MAY-SEP	78	83	87	121%	91	96	72
Stillwater R nr Absarokee ²	MAY-JUL	445	500	540	129%	580	635	420
	MAY-SEP	525	590	635	128%	680	745	495
Clarks Fk Yellowstone R nr Belfry	MAY-JUL	720	770	800	167%	835	885	480
	MAY-SEP	790	845	885	169%	920	975	525
Cooney Reservoir Inflow	MAY-JUL	14.5	24	31	94%	38	48	33
	MAY-SEP	23	33	41	95%	48	59	43
Yellowstone R at Billings	MAY-JUL	3740	4130	4400	147%	4660	5060	3000
	MAY-SEP	4270	4750	5080	146%	5400	5880	3490

1) 90% and 10% exceedance probabilities are actually 95% and 5%

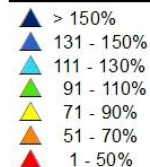
**Upper Yellowstone River Basin
Streamflow Forecast, Snow Water Equivalent
Percentage of Normal
May 1, 2017**



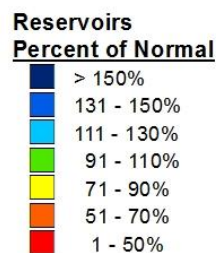
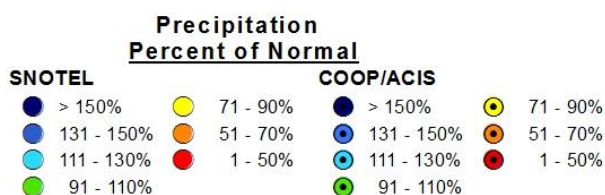
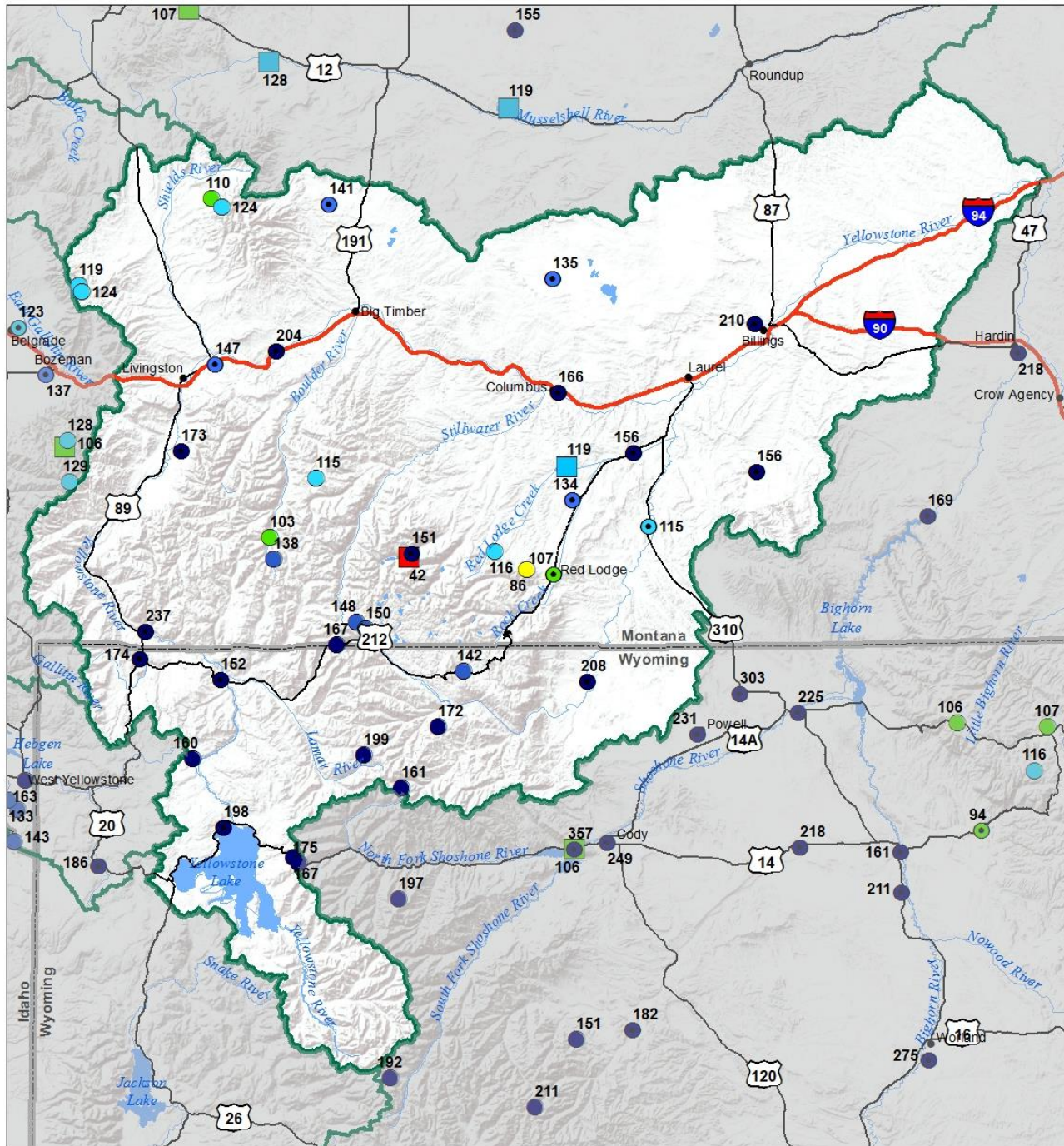
**Snow Water Equivalent
Percent of Normal**



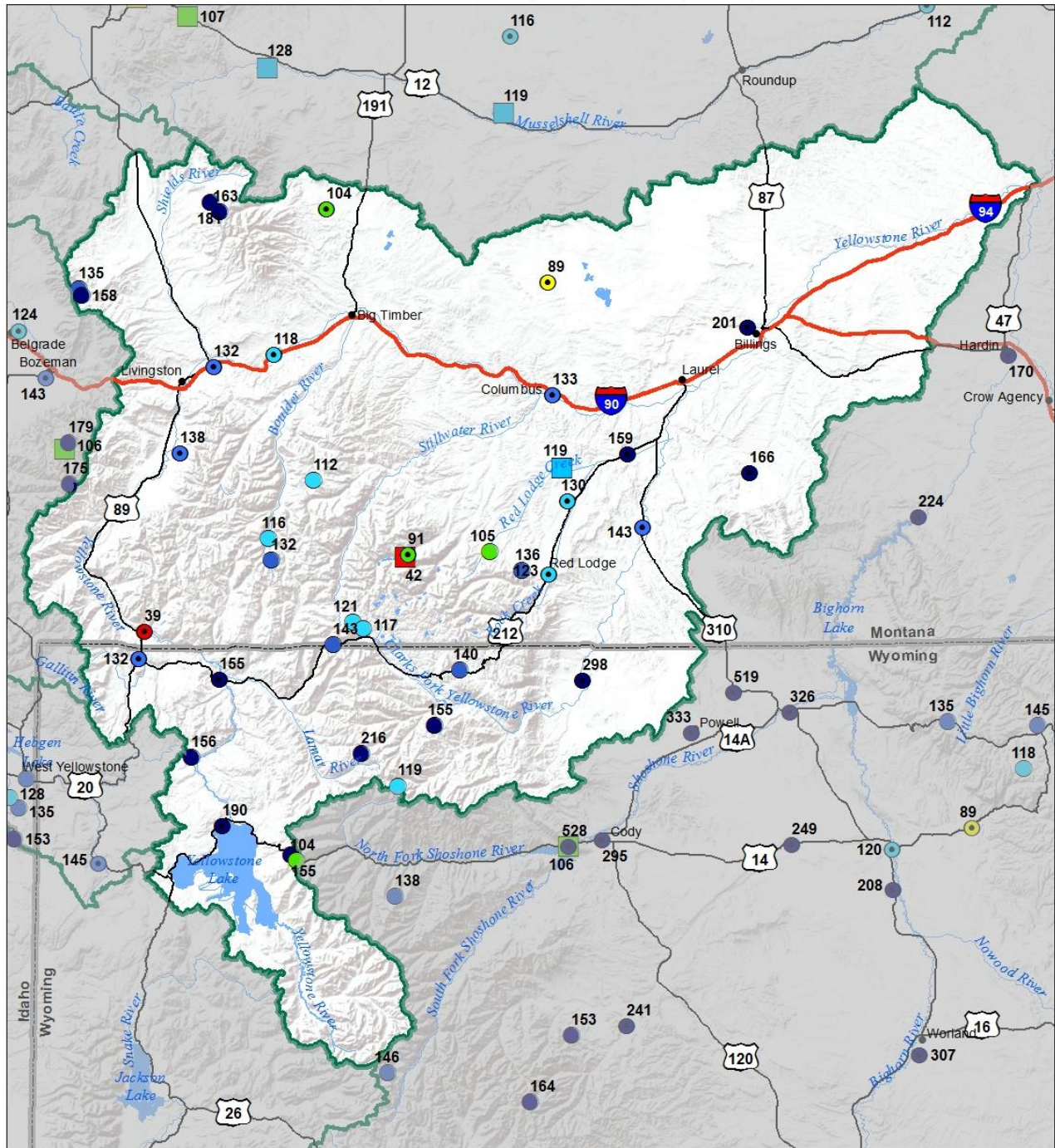
**Streamflow Forecast
Percent of Average Flows**



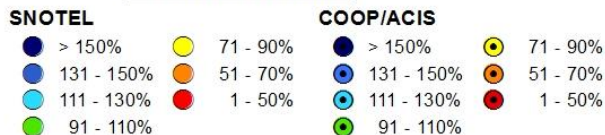
Upper Yellowstone River Basin Water Year to Date Precipitation and Reservoir Levels Percentage of Normal May 1, 2017



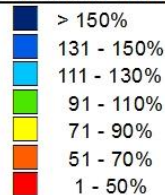
**Upper Yellowstone River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)**



**Precipitation
Percent of Normal**



**Reservoirs
Percent of Normal**





Lower Yellowstone River Basin

There is a substantial amount of snow water in the Lower Yellowstone River basin at this time, record breaking snowfall in the Wind River and Shoshone River basins will yield a large volume of water this runoff season. April yielded above normal snowfall to all basins in the Lower Yellowstone this month, increasing already high snowpack percentiles in the western half of the basin, and improving snowpack totals in the Bighorn Range to above normal for May 1st. Most SNOTEL and snowcourses in the basin are only just reaching their seasonal peaks at the beginning of May. Very little melt at water yielding elevations has occurred, leaving the bulk to the water to enter the rivers and streams. Streamflow forecasts in these basins reflect the above normal, or record breaking, snowpack for this date and the abundance of precipitation through the water year and are well above average. The snowpack has been of concern to Water managers from the Bureau of Reclamations, who have been dropping the level in Bighorn Reservoir in order to make room for the water that is still to come. This has raised outflows to the Bighorn River to near 12,000 cfs, which has been concerning to some anglers and homeowners. There is a lot of water waiting to come down this system, and Reclamation is closely coordinating operations with stakeholders and other State and Federal agencies through meetings and regular conference calls.

Lower Yellowstone River Basin Data Summary

Snowpack	Percent of 1981-2010 Normal (Median)	Last Year Percentage of Normal (Median)
WIND RIVER BASIN	221%	110%
SHOSHONE RIVER BASIN	147%	74%
BIGHORN RIVER BASIN	148%	89%
LITTLE BIGHORN BASIN	114%	88%
TONGUE RIVER BASIN	136%	93%
POWDER RIVER BASIN	157%	104%
Basin-Wide	172%	99%

Precipitation	Monthly Percentage of Average	WYTD Percentage of 1981-2010 Average*	WYTD Last Year Percentage of Average
Mountain Precipitation	159%	153%	96%
Valley Precipitation	218%	176%	124%
Basin-Wide Precipitation	184%	162%	107%

*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

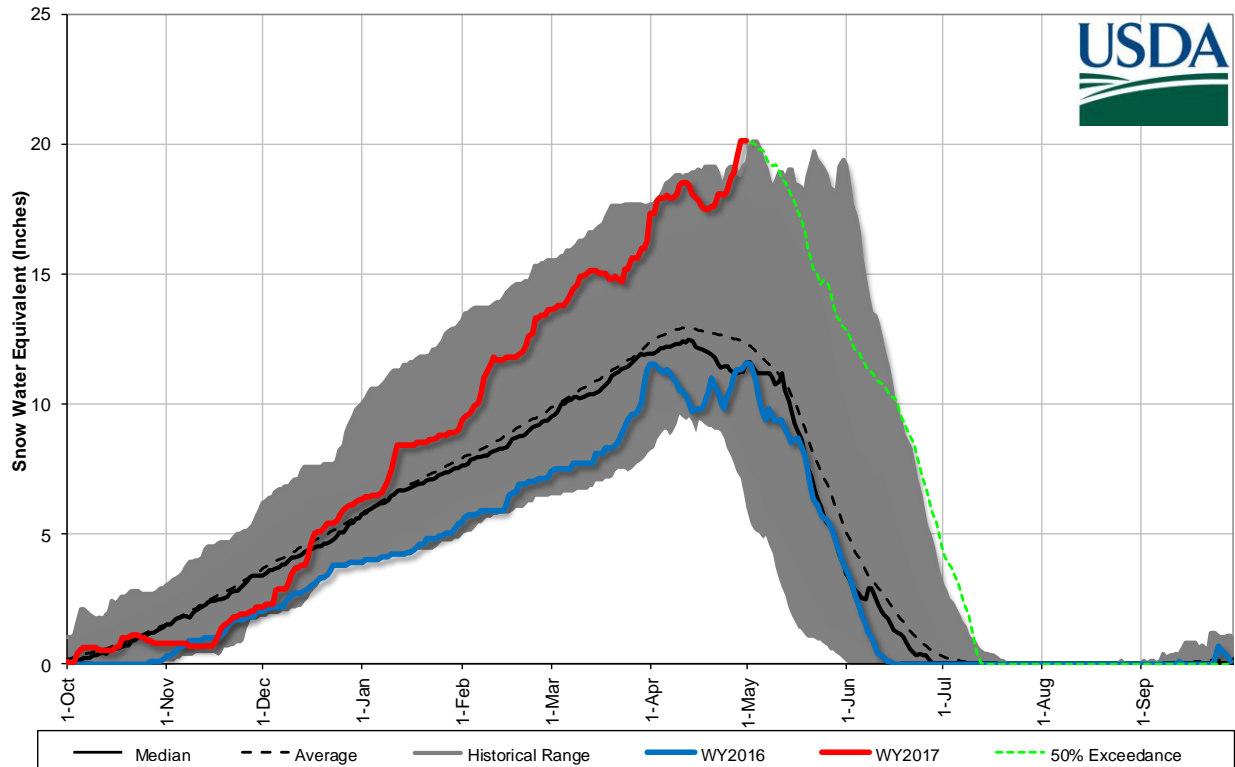
Reservoir Storage	Percentage of Average	Percentage of Capacity (Total)	Last Year Percentage of Average
Basin-Wide Storage	99%	56%	108%

*See Reservoir Storage Table for storage in individual reservoirs

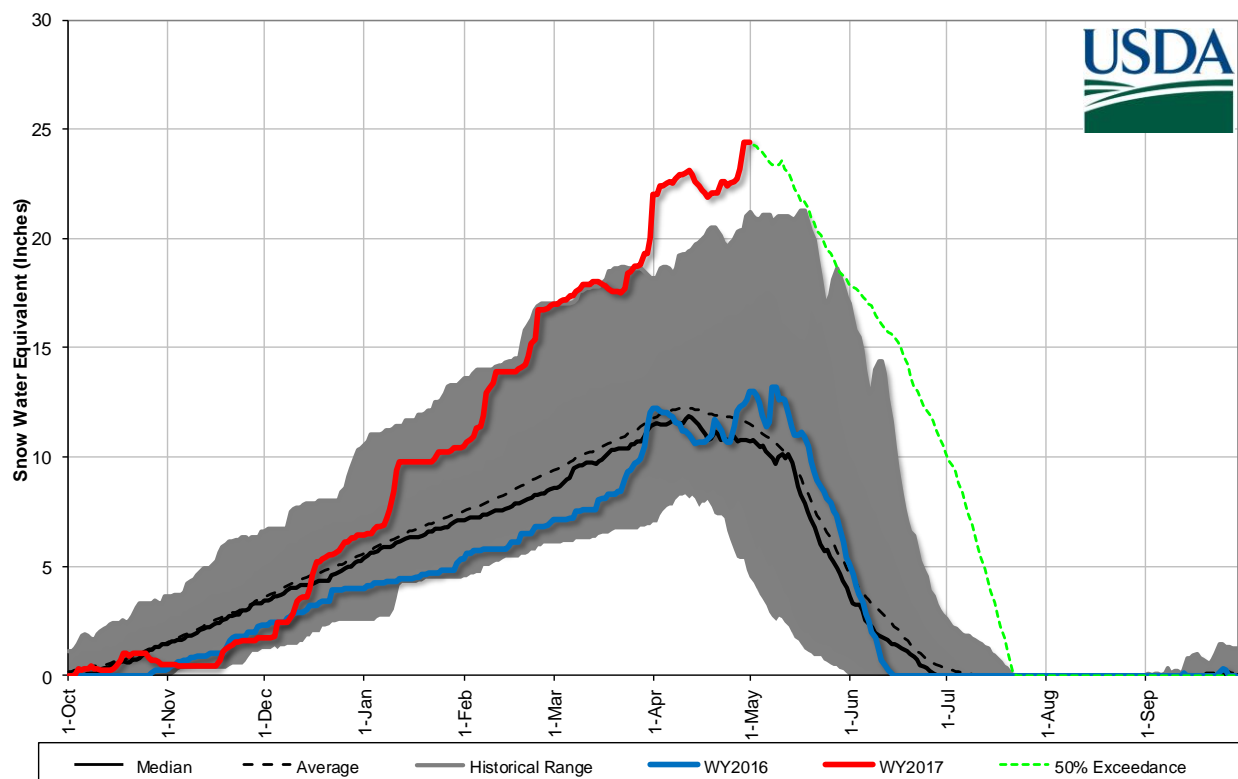
End of Month Storage

	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	% Average	% Capacity
Bighorn Lake	729.8	791.0	773.6	1356.0	94%	54%
Tongue River Res	67.2	80.3	34.7	79.1	194%	85%

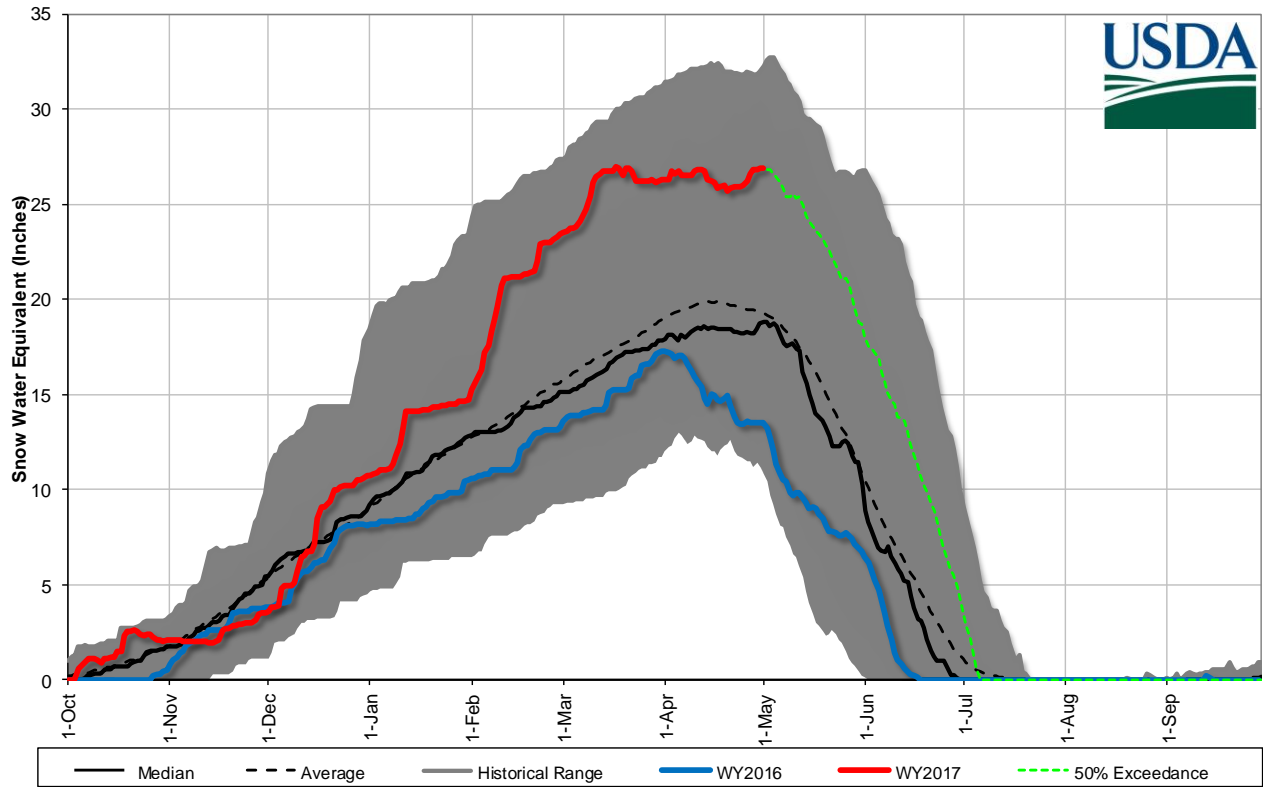
Lower Yellowstone River Basin Snowpack with Non-Exceedence Projections
Based on provisional SNOTEL daily data as of 5/1/2017



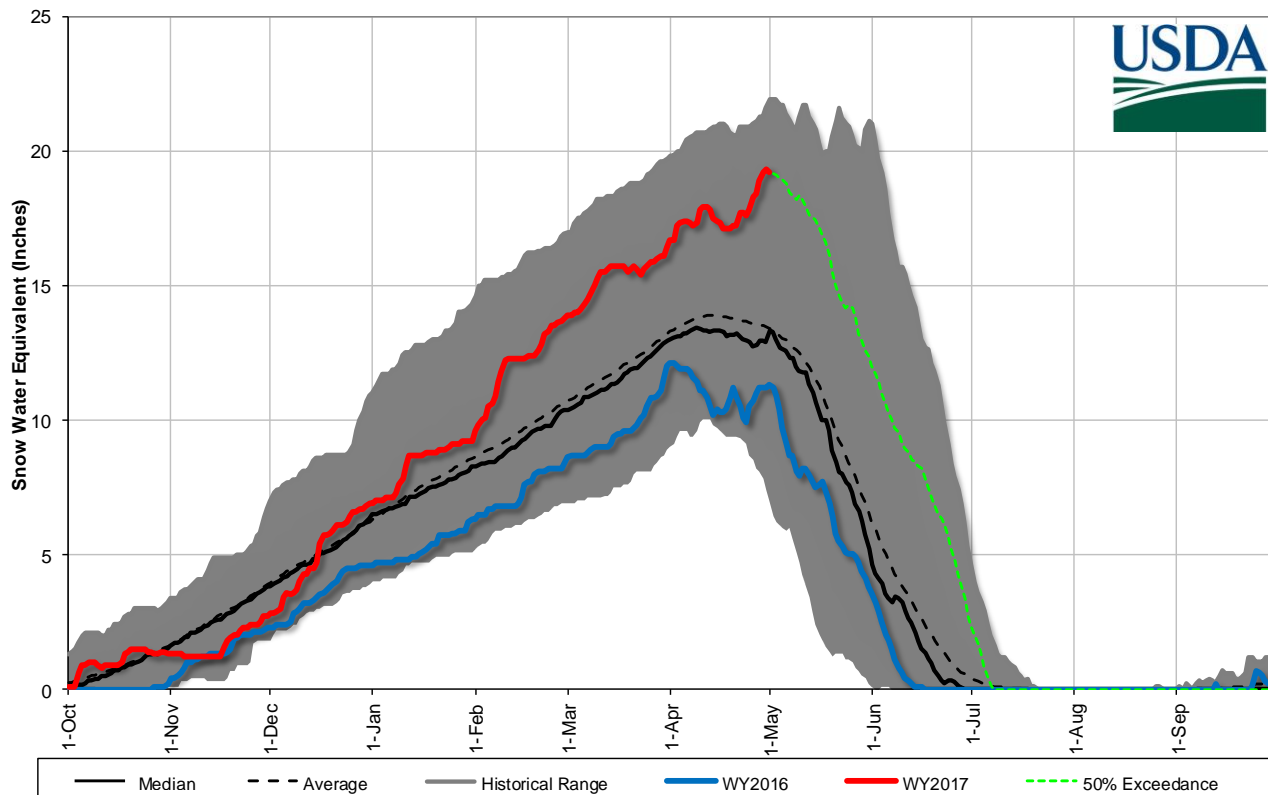
Wind River Basin Snowpack with Non-Exceedence Projections
Based on provisional SNOTEL daily data as of 5/1/2017



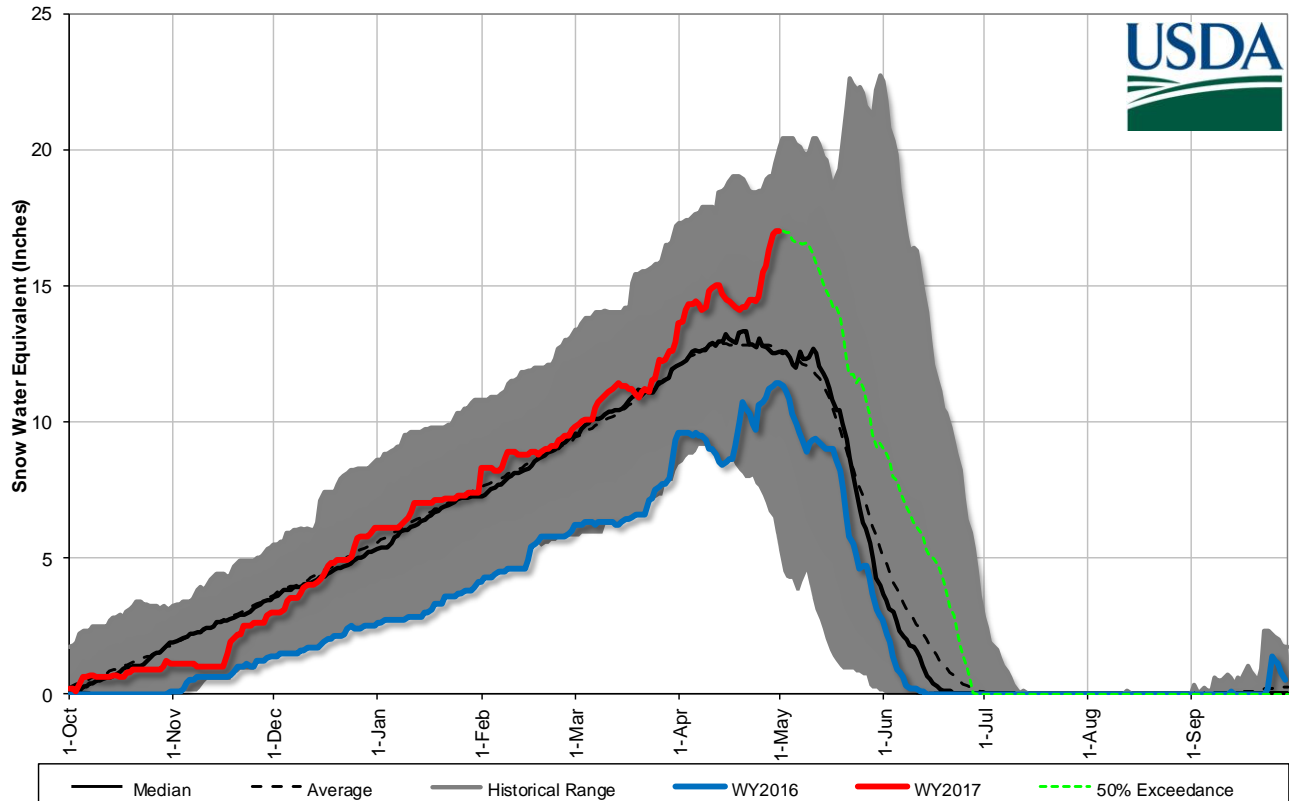
Shoshone River Basin Snowpack with Non-Exceedence Projections
Based on provisional SNOTEL daily data as of 5/1/2017



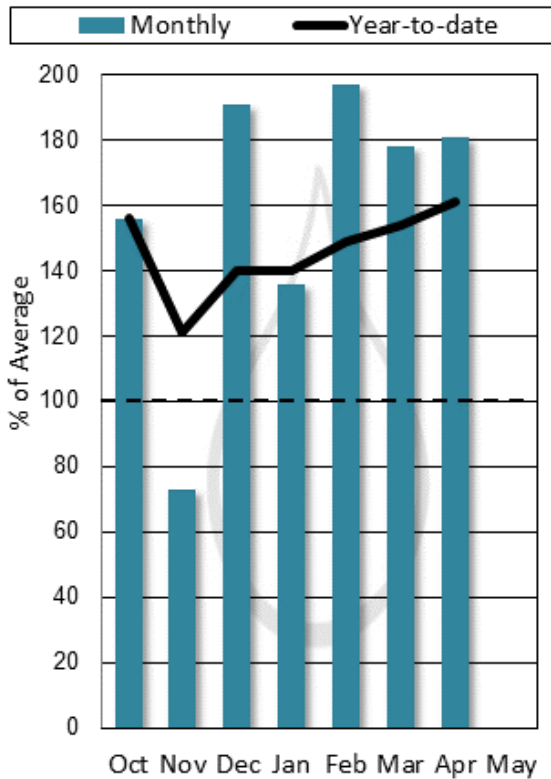
Bighorn River Basin Snowpack with Non-Exceedence Projections
Based on provisional SNOTEL daily data as of 5/1/2017



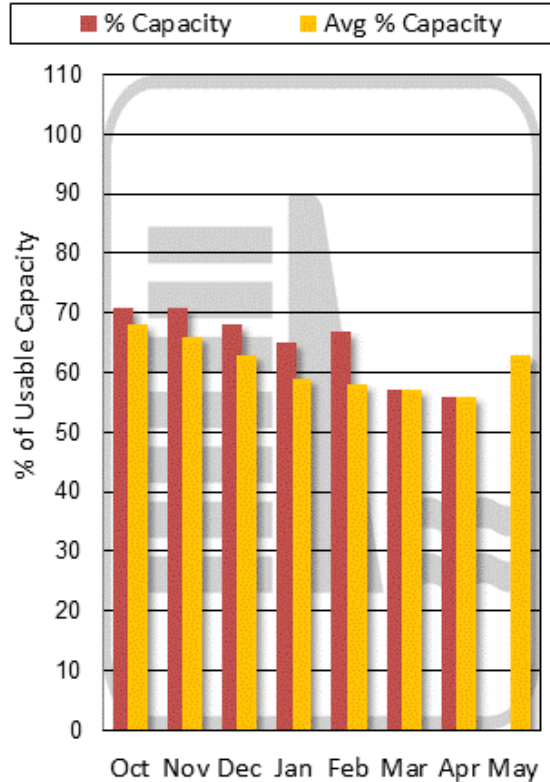
Tongue River Basin Snowpack with Non-Exceedence Projections
Based on provisional SNOTEL daily data as of 5/1/2017



**Mountain and Valley
Precipitation**



**End of Month Reservoir
Storage**



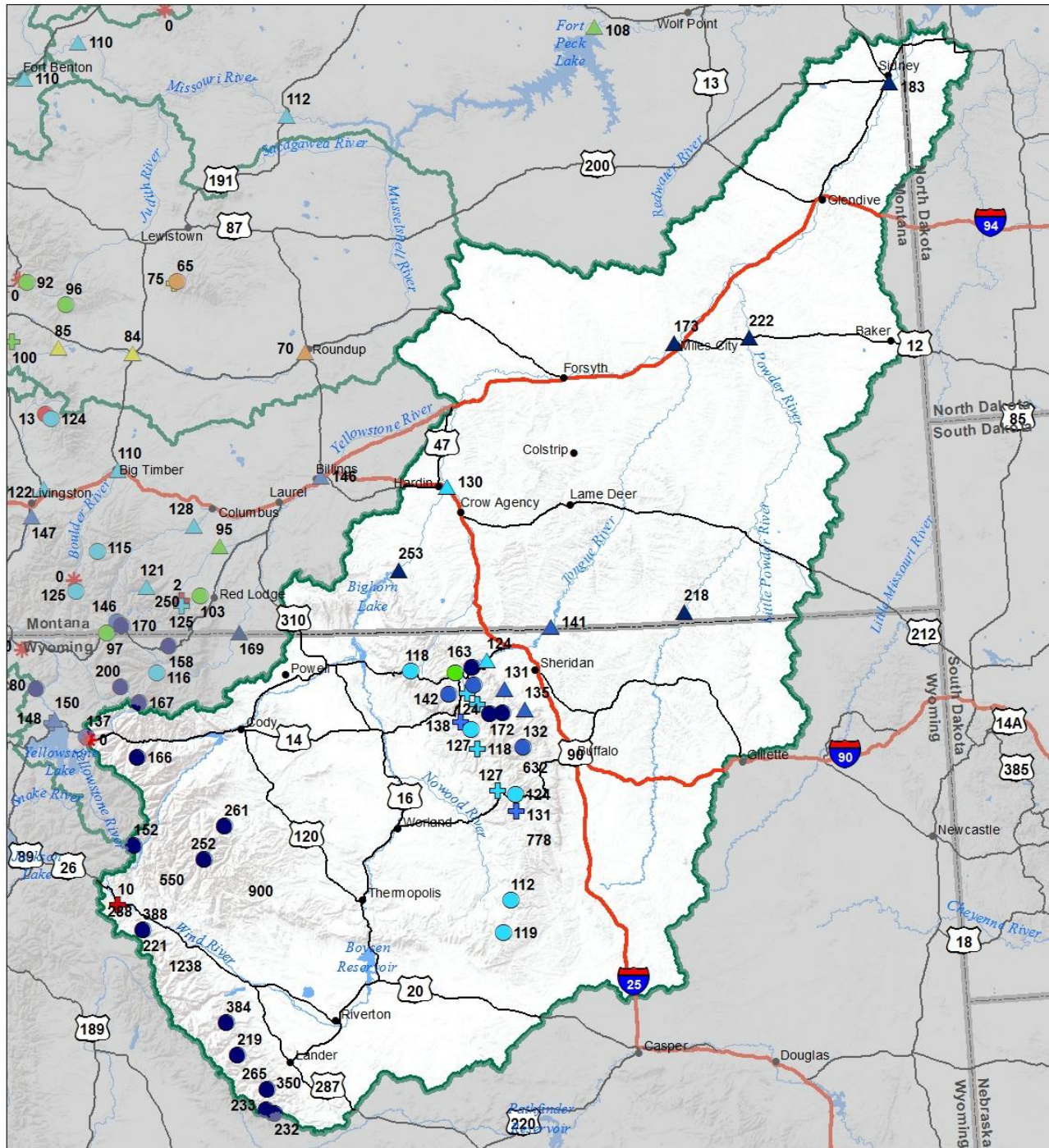
Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Lower Yellowstone River Basin

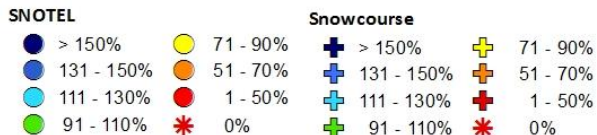
Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume						30yr Avg (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Bighorn R nr St. Xavier ²	MAY-JUL	2620	2890	3080	244%	3270	3540	1260
	MAY-SEP	2900	3190	3390	253%	3590	3880	1340
Little Bighorn R nr Hardin	MAY-JUL	69	94	112	132%	129	155	85
	MAY-SEP	78	107	126	130%	146	175	97
Tongue R nr Dayton ²	MAY-JUL	75	90	100	125%	110	124	80
	MAY-SEP	86	103	114	124%	125	141	92
Big Goose Ck nr Sheridan	MAY-JUL	43	53	59	134%	66	76	44
	MAY-SEP	51	61	68	131%	75	85	52
Little Goose Ck nr Bighorn	MAY-JUL	31	37	41	141%	45	51	29
	MAY-SEP	39	46	50	135%	55	61	37
Tongue River Reservoir Inflow ²	MAY-JUL	164	215	250	143%	290	340	175
	MAY-SEP	185	240	280	141%	315	375	198
Yellowstone R at Miles City ²	MAY-JUL	6390	7100	7580	173%	8060	8770	4370
	MAY-SEP	7260	8120	8700	173%	9280	10100	5030
Powder R at Moorehead	MAY-JUL	215	285	335	222%	385	460	151
	MAY-SEP	245	320	370	218%	420	495	170
Powder R nr Locate	MAY-JUL	225	310	365	223%	420	505	164
	MAY-SEP	260	350	410	222%	465	555	185
Yellowstone R nr Sidney ²	MAY-JUL	6620	7430	7980	182%	8540	9350	4380
	MAY-SEP	7470	8450	9120	183%	9790	10800	4980

1) 90% and 10% exceedance probabilities are actually 95% and 5%

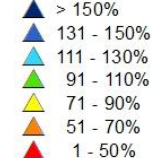
**Lower Yellowstone River Basin
Streamflow Forecast, Snow Water Equivalent
Percentage of Normal
May 1, 2017**



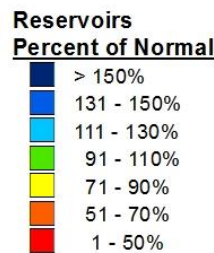
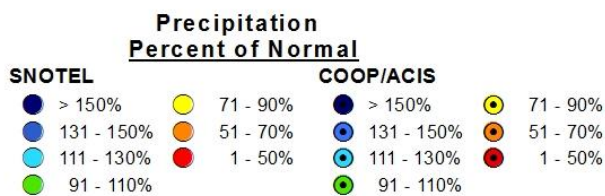
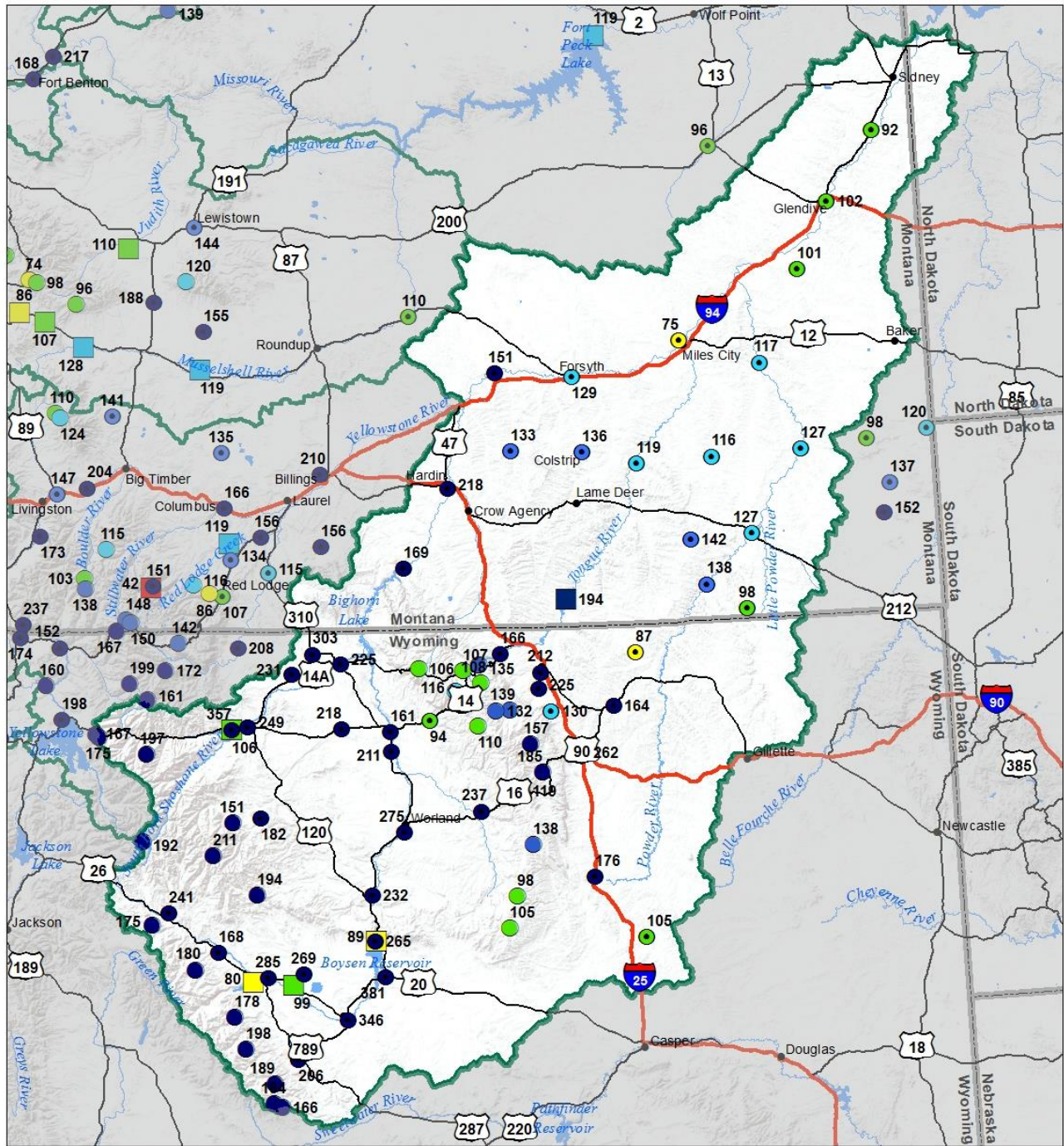
**Snow Water Equivalent
Percent of Normal**



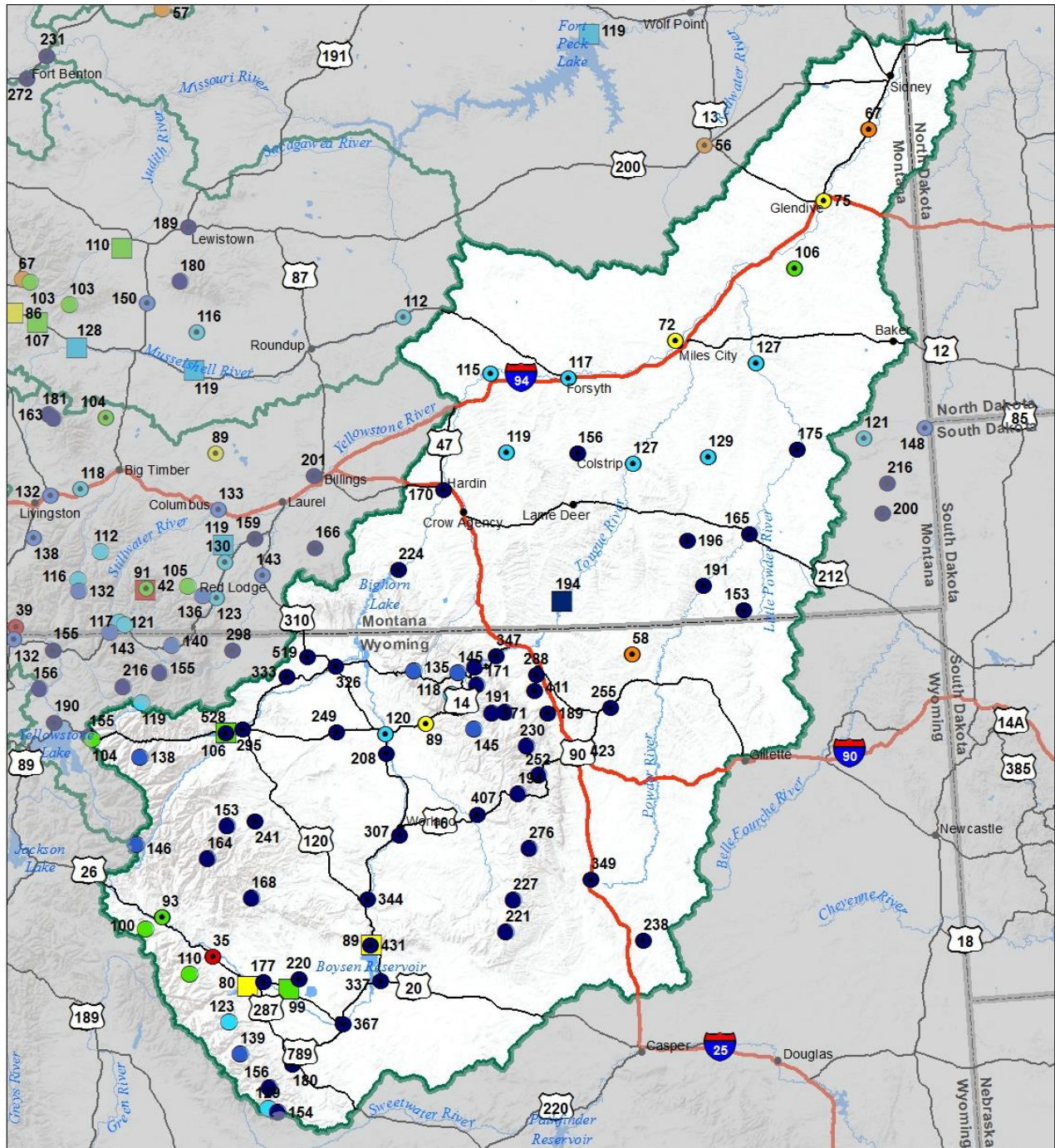
**Streamflow Forecast
Percent of Average Flows**



Lower Yellowstone River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017



**Lower Yellowstone River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
May 1, 2017 (April 1, 2017 - May 1, 2017)**



**Precipitation
Percent of Normal**

SNOTEL		COOP/ACIS	
● > 150%	● 71 - 90%	● > 150%	● 71 - 90%
● 131 - 150%	● 51 - 70%	● 131 - 150%	● 51 - 70%
● 111 - 130%	● 1 - 50%	● 111 - 130%	● 1 - 50%
● 91 - 110%		● 91 - 110%	

**Reservoirs
Percent of Normal**

■ > 150%
■ 131 - 150%
■ 111 - 130%
■ 91 - 110%
■ 71 - 90%
■ 51 - 70%
■ 1 - 50%



Data Summary (SNOTEL and Snowcourse)

Montana Snow Sites	Network	Elevation (ft)	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
Albro Lake	SNOTEL	8300	65	25.9	18.9	137	17.1	90
Ambrose	SC	6480			9.6			
Arch Falls	SC	7350	30	9.2	10.7	86	8.5	79
Ashley Divide	SC	4820	0	0	0		0	
Badger Pass	SNOTEL	6900	83	39.7	29.4	135	18.8	64
Banfield Mountain	SNOTEL	5600	43	16.1	13.1	123	2.7	21
Baree Creek	SC	5500	78	34.8	34.8	100	25.3	73
Baree Midway	SC	4600	60	26.4	22.7	116	14.2	63
Baree Trail	SC	3800	6	2.2	0		0	
Barker Lakes	SNOTEL	8250	49	15.9	16.3	98	15.6	96
Basin Creek	SNOTEL	7180	23	7.3	9	81	8.5	94
Bassoo Peak	SC	5150	13	5.3	0		0	
Beagle Springs	SNOTEL	8850	43	13.8	8.7	159	9.5	109
Bear Basin	SC	8150	51	19	17.2	110	16.8	98
Bear Mountain	SNOTEL	5400	112	53.3	53.7	99	38.6	72
Beartooth Lake	SNOTEL	9360	98	36.1	22.8	158	18.5	81
Beaver Creek	SNOTEL	7850	59	20.3	18.2	112	15.2	84
Big Snowy	SC	7150	52	15.4	20.6	75	21.1	102
Bisson Creek	SNOTEL	4920	13	6.5	4.3	151	0	0
Black Bear	SNOTEL	8170	123	51.4	37.4	137	30.2	81
Black Mountain	SC	7750	46	15.2	15.9	96	16.4	103
Black Pine	SNOTEL	7210	28	10.7	8.5	126	1.5	18
Blacktail	SC	5650	23	9.8	7	140	0	0
Blacktail Mtn	SNOTEL	5650	24	9.5			0	
Bloody Dick	SNOTEL	7600	39	16.3	8.5	192	10.7	126
Bots Sots	SC	7750	4	0.1	4.5	2	0	0
Boulder Mountain	SNOTEL	7950	57	20.1	20.9	96	19.7	94
Box Canyon	SNOTEL	6670	0	0	3	0	0	0
Boxelder Creek	SC	5100	0	0	1.6	0	0	0
Brackett Creek	SNOTEL	7320	58	24.5	20.1	122	17.1	85
Bristow Creek	SC	3900						
Brush Creek Timber	SC	5000	0	0	1	0	0	0
Bull Mountain	SC	6600	0	0	0			
Burnt Mtn	SNOTEL	5880	3	0.4	0		0	
Cabin Creek	SC	5200	0	0	0.2	0	0	0
Calvert Creek	SNOTEL	6430	0	0	0.7	0	0	0
Camp Senia	SC	7890	44	13.5	5.4	250	6.4	119
Canyon	SNOTEL	7870	49	18.7	10.4	180	5.9	57
Carrot Basin	SNOTEL	9000	107	35.7	28.6	125	25.7	90
Chessman Reservoir	SC	6200	0	0	0.4	0	0	0
Chicago Ridge	SC	5800	90	36.6			27	

Chicken Creek	SC	4060	21	8.5	4.8	177	0	0
Clover Meadow	SNOTEL	8600	57	17.5	17.4	101	14	80
Cole Creek	SNOTEL	7850	60	17.1	16.6	103	12	72
Combination	SNOTEL	5600	0	0	0		0	
Copper Bottom	SNOTEL	5200	0	0			0	
Copper Camp	SNOTEL	6950	75	39			20	
Copper Mountain	SC	7700	40	14	9.6	146	7.4	77
Cottonwood Creek	SC	6400	0	0	7.8	0	1.3	17
Coyote Hill	SC	4200	0	0	0		0	
Crevice Mountain	SC	8400						
Crystal Lake	SNOTEL	6050	19	7.4	11.3	65	11.8	104
Dad Creek Lake	SC	8800			15.6			
Daisy Peak	SNOTEL	7600	32	9.8	10.2	96	8	78
Daly Creek	SNOTEL	5780	10	4.4	3.3	133	0	0
Darkhorse Lake	SNOTEL	8600	102	36	30.1	120	33.6	112
Deadman Creek	SNOTEL	6450	0	0	5.2	0	3.4	65
Desert Mountain	SC	5600						
Discovery Basin	SC	7050	35	11.2	8.8	127	6.7	76
Divide	SNOTEL	7800	30	10	11.1	90	7.4	67
Dix Hill	SC	6400	0	0	0.2	0	0	0
Dupuyer Creek	SNOTEL	5750	23	7.9	6.7	118	0.6	9
Eagle Creek	SC	7000						
East Boulder Mine	SNOTEL	6335	2	0.9			0	
El Dorado Mine	SC	7800						
Elk Horn Springs	SC	7800			6.7		3.1	46
Elk Peak	SNOTEL	7600	55	22			19.2	
Elk Peak	SC	8000	45	15.2	15.2	100	11.9	78
Emery Creek	SNOTEL	4350	24	9.2	5.7	161	0	0
Fatty Creek	SC	5500	64	26	20.9	124	17.5	84
Fish Creek	SC	8000			11			
Fisher Creek	SNOTEL	9100	128	47.6	32.7	146	27.6	84
Flattop Mtn.	SNOTEL	6300	132	56.6	42.2	134	37.8	90
Fleecer Ridge	SC	7500	29	11	8	138		
Foolhen	SC	8280	52	18	15.4	117	13.4	87
Forest Lake	SC	6400						
Four Mile	SC	6900	20	6.8	4.6	148	2.2	48
Freight Creek	SC	6000	25	8.7	9	97	1.3	14
Frohner Meadow	SNOTEL	6480	0	0	6.4	0	0	0
Garver Creek	SNOTEL	4250	17	7	1.9	368	0	0
Gibbons Pass	SC	7100						
Goat Mountain	SC	7000			5.4			
Government Saddle	SC	5270	78	32.2			24.8	
Grave Creek	SNOTEL	4300	22	9.3	5	186	0	0
Griffin Creek Divide	SC	5150	19	6.8	2	340	0	0
Hand Creek	SNOTEL	5035	15	6.1	5.5	111	0	0
Hawkins Lake	SNOTEL	6450	89	34.3	25.9	132	20.3	78
Haymaker	SC	8050						

Hebgen Dam	SC	6550	0	0	3.7	0	0	0
Hell Roaring Divide	SC	5770	88	30.1	26.6	113	22.6	85
Herrig Junction	SC	4850	57	22.6	20.9	108	11.3	54
Highwood Divide	SC	5650						
Highwood Station	SC	4600			0			
Holbrook	SC	4530			0		0	
Hoodoo Basin	SNOTEL	6050	111	46.2	39.8	116	31.7	80
Humboldt Gulch	SNOTEL	4250	11	4	1.4	286	0	0
Jakes Canyon	SC	9040						
Johnson Park	SC	6450	0	0	0			
Kishenehn	SC	3890						
Kraft Creek	SNOTEL	4750	0	0			0	
Lake Camp	SC	7780	27	9.8	6.6	148	2	30
Lakeview Canyon	SC	6930			8.5			
Lakeview Ridge	SNOTEL	7400	7	2.3	7.9	29	0	0
Lemhi Ridge	SNOTEL	8100	34	11.2	10	112	5.9	59
Lick Creek	SNOTEL	6860	26	8.8	8.7	101	8.7	100
Little Park	SC	7400	45	11.4	12.6	90	10.8	86
Logan Creek	SC	4300	0	0	0		0	
Lolo Pass	SNOTEL	5240	49	23	17.2	134	8.9	52
Lone Mountain	SNOTEL	8880	58	22.2	18.5	120	17.7	96
Lookout	SNOTEL	5140	50	22.5	22.7	99	5.8	26
Lower Twin	SNOTEL	7900	68	23.4	18.4	127	19.3	105
Lubrecht Flume	SNOTEL	4680	0	0	0		0	
Lubrecht Forest No 3	SC	5450	0	0	0		0	
Lubrecht Forest No 4	SC	4650	0	0	0		0	
Lubrecht Forest No 6	SC	4040	0	0	0		0	
Lubrecht Hydroplot	SC	4200	0	0	0		0	
Lupine Creek	SC	7380	0	0	1.2	0	0	0
Madison Plateau	SNOTEL	7750	68	29.8	21.3	140	17.1	80
Many Glacier	SNOTEL	4900	15	4.8	0.6	800	0	0
Marias Pass	SC	5250	27	10.9	10.4	105	0.4	4
Mineral Creek	SC	4000	0	0	6.5	0	0	0
Monument Peak	SNOTEL	8850	72	26.2	21	125	16.7	80
Moss Peak	SNOTEL	6780	131	51.7	38.7	134	37.4	97
Moulton Reservoir	SC	6850			1.5			
Mount Allen No 7	SC	5700	96	40	35	114	18	51
Mount Lockhart	SNOTEL	6400	51	21.6	16.9	128	10.6	63
Mudd Lake	SC	7650			16.2			
Mule Creek	SNOTEL	8300	58	19.9	16.1	124	15	93
N Fk Elk Creek	SNOTEL	6250	26	8.9	7.5	119	2.3	31
Nevada Ridge	SNOTEL	7020	43	17	12.3	138	9.5	77
New World	SC	6900	30	10.5			7.3	
Nez Perce Camp	SNOTEL	5650	25	10.5	9.7	108	3.8	39
Noisy Basin	SNOTEL	6040	116	54.9	44	125	39.6	90
Norris Basin	SC	7550			5.4			
North Fork Jocko	SNOTEL	6330	90	40.3	38.2	105	32.2	84

Northeast Entrance	SNOTEL	7350	7	2.9	3	97	0	0
Onion Park	SNOTEL	7410	32	11	13.5	81	11.7	87
Ophir Park	SC	7150	37	12.9	13.8	93	6.6	48
Parker Peak	SNOTEL	9400	106	42.6	21.3	200	19.8	93
Peterson Meadows	SNOTEL	7200	39	13.4	10.7	125	11.6	108
Pickfoot Creek	SNOTEL	6650	13	4.8	3.7	130	0	0
Pike Creek	SNOTEL	5930	13	5.7			0	
Pipestone Pass	SC	7200	8	2.6	3.4	76	1.1	32
Placer Basin	SNOTEL	8830	65	20.2	17.6	115	14.7	84
Poorman Creek	SNOTEL	5100	79	34.8	28.2	123	20.7	73
Porcupine	SNOTEL	6500	1	0.1	0.8	13	0	0
Potomageton Park	SC	7150	20	7.7	7.1	108	2.4	34
Revais	SC	4800	0	0	0		0	
Rock Creek Mdws	SC	3400	21	9.2			0	
Rocker Peak	SNOTEL	8000	47	14.8	14.9	99	14.4	97
Rocky Boy	SNOTEL	4700	0	0	0		0	
Roland Summit	SC	5120						
S Fork Shields	SNOTEL	8100	64	22.1	17.8	124	16	90
Sacajawea	SNOTEL	6550	21	8.4	10.3	82	6.6	64
Saddle Mtn.	SNOTEL	7940	72	27.5	22.5	122	22.9	102
Short Creek	SNOTEL	7000	0	0	3.8	0	0	0
Shower Falls	SNOTEL	8100	82	25	23.9	105	22.3	93
Skalkaho Summit	SNOTEL	7250	59	25.3	22.1	114	12.7	57
Sleeping Woman	SNOTEL	6150	42	17.3	11	157	3.3	30
Slide Rock Mountain	SC	7100	39	15	13	115	9.9	76
Spotted Bear Mountain	SC	7000	23	9	7.7	117	0	0
Spur Park	SNOTEL	8100	61	20.7	22.4	92	22.4	100
Stahl Peak	SNOTEL	6030	126	50.3	35.4	142	34.1	96
Stemple Pass	SC	6600	31	9.8	6.9	142	5	72
Storm Lake	SC	7780	51	16	14.4	111	12.8	89
Stringer Creek	SNOTEL	6550	14	4.8	8.1	59	6.3	78
Stryker Basin	SC	6180	100	32.2	30.3	106	30.8	102
Stuart Mountain	SNOTEL	7400	100	40.8	29.4	139	28.1	96
Taylor Road	SC	4080	0	0	0		0	
Ten Mile Lower	SC	6600	5	1.8	2.7	67	0.2	7
Ten Mile Middle	SC	6800	30	9.4	9.4	100	7.9	84
Tepee Creek	SNOTEL	8000	34	13.6	13.4	101	9.2	69
Timberline Creek	SC	8850	52	17.2	13.8	125	11.2	81
Tizer Basin	SNOTEL	6880	2	0.7	8.2	9	0	0
Trinkus Lake	SC	6100		44.6	38.8	115	34.2	88
Truman Creek	SC	4060	0	0	0		0	
Twelvemile Creek	SNOTEL	5600	17	6.6	3.4	194	0	0
Twenty-One Mile	SC	7150	37	14.8	11.3	131	9	80
Twin Lakes	SNOTEL	6400	81	38.5	33	117	29.8	90
Upper Holland Lake	SC	6200	71	31.7	30.4	104	26.8	88
Waldron	SNOTEL	5600	27	9.8	4.8	204	0	0
Warm Springs	SNOTEL	7800	77	24.9	21.4	116	23.3	109

Weasel Divide	SC	5450	84	36.1	28.8	125	18.5	64
West Yellowstone	SNOTEL	6700	0	0	1.8	0	0	0
Whiskey Creek	SNOTEL	6800	30	12.8	14.6	88	8.2	56
White Elephant	SNOTEL	7710	77	31.9	24	133	16.7	70
White Mill	SNOTEL	8700	97	40.4	23.8	170	20.9	88
Wolverine	SNOTEL	7650	16	2.9	2.5	116	0.3	12
Wood Creek	SNOTEL	5960	19	7	6.8	103	0.3	4
Wrong Creek	SC	5700	22	8.8	4.7	187	0.2	4
Wrong Ridge	SC	6800		16.9	13	130	2	15
Younts Peak	SNOTEL	8350	50	23.5	15.5	152	5.1	33

Issued by:

Leonard Jordan
Chief (Acting)
Natural Resources Conservation Service
U.S. Department of Agriculture

Released by:

Lisa Coverdale
State Conservationist
Natural Resources Conservation Service
Bozeman, Montana

Report Created by:

Montana Snow Survey Staff
10 East Babcock St, Room 443
Bozeman, MT 59715
Email: MT-nrcs-snow@one.usda.gov



Montana Water Supply Outlook Report

Natural Resources Conservation Service

